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ABSTRACT

Procedures for early identification of delinquency-prone youth in Eau Claire County, Wisconsin, are described in this report of a 1961-1972 study designed to delineate the problems of aggressive and disruptive classroom behavior as related to delinquency. Data collection began in 1961, when each 3rd-, 6th-, and 9th-grade teacher in Eau Claire County, Wisconsin, was asked to nominate 2 boys and 2 girls whose behavior was persistently aggressive and 2 boys and 2 girls whose behavior was persistently socially acceptable and productive (n=1550). This sample was then used for 3 previous phases of investigation (as reported in ED 014 335, ED 019 153, and ED 020 812) and for the present study, Phase IV. The method of investigation for Phase IV consisted of obtaining test scores and grades for the original 3rd and 6th graders; obtaining rank in graduating class for the original 6th and 9th graders; completion of The Behavior Problems Checklist for 12th graders; completion of social adjustment ratings by teachers on 8 aspects of behavior for 12th graders and the graduates; and collection of data from police and sheriff departments, welfare agencies, the juvenile court, a mental health agency, and the health department. From these data, variables were isolated for use in predicting academic achievement, social adjustment, health and welfare, and law contact. In the report, statistical analyses in terms of these variables are presented in tabular form, and manuals are provided for use in predicting behavior in terms of the variables that were isolated. (PS)

ED 062059

THE EAU CLAIRE COUNTY YOUTH STUDY

Phase IV

1969-1972

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RC 006089

Early Identification of Delinquency Prone Youth

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March 31, 1972

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Publications

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FINAL REPORT

Eau Claire County Youth Study - Phase IV
MH17641-03 and 03S1 5/1/69 - 3/31/72

1. The Problem

Questions:

a) Why was the study undertaken?
b) What were the goals of the study?
c) What previous work had been done in this area?

Response:

This report will first delineate the problems of aggressive and disruptive classroom behavior and its relationship to delinquency by reviewing some earlier reports and research studies. The Eau Claire County Youth Study, a longitudinal research project (1961 - 1972), will then be described. This project has been carried on in four major phases. The research activities and findings of the first three phases, reports of which were made at the end of each phase, will be reviewed briefly. This report presents the findings of Phase IV and suggestions and procedures formulated to help alleviate or prevent problems of aggressive and disruptive classroom behavior and delinquency. The final section of this paper is a discussion of some of the problems and challenges which have been encountered in this research and along with some suggestions for their solution. The report outline suggested by the National Institute of Mental Health will be followed.

Problem

The aggressive-disruptive child is a serious problem in the classroom. His behavior may often make it impossible for his teacher to carry out planned instructional activities. Difficulties in managing the class along with those of controlling the aggressive-disruptive child may be severely frustrating and even emotionally disturbing for the teacher. The child's classmates may also be affected in several ways: their academic achievements may be impaired; their social learning may be adversely affected; and they may suffer anxiety as they observe the aggressive-disruptive classroom episodes. But, the immediate and long-range effects of the aggressive-disruptive child's behavior on himself are perhaps the most serious. He will suffer the disadvantages which his peers suffer, but more intensely. Also, it seems likely that patterns of aggressive behavior, first revealed in school, may manifest themselves later in delinquency and crime.

In The Challenge of Crime in a Free Society, the President's Commission on Law Enforcement and Administration of Justice (1967) recognized the serious problem of the aggressive-disruptive child's relationship with the

school and suggested that the school was not only unable to cope with the problem, but was probably even augmenting it (p. 69). In Juvenile Delinquency and Youth Crime, the Task Force on Juvenile Delinquency (1967), while specifically acknowledging the predictive relationship between persistent school misconduct and delinquency, suggested that this was partially because of the ineffective ways schools handle children who misbehave (p. 233).

Reviews of the research on delinquency and aggressive classroom behavior by Quay (1965), Kvaraceus (1966), Balow (1966), and the National Society for The Study of Education (1966) indicate that children who are persistently aggressive and disruptive in school are lower in intelligence, lower in basic scholastic achievements, and have more contacts with law enforcement agencies than children whose school behavior is not aggressive and disruptive.

More detailed review of related research reports are presented in the final reports of Phases I, II, and III of this research project (Thurston, Feldhusen, and Benning, 1964; Feldhusen, Thurston, and Benning, 1965; Benning, Feldhusen, and Thurston, 1968).

Results of Phases I, II, and III of The Eau Claire County Youth Study

Phases I, II, and III of the Eau Claire County Youth Study obtained results which in large measure supported the findings of these earlier researches and extended the observations to several other important areas in the lives of the youngsters and their parents.

In the first years of this investigation, each 3rd, 6th, and 9th grade teacher in Eau Claire County, Wisconsin, was asked to nominate from her class two boys and two girls whose behavior was persistently aggressive and disruptive and two boys and two girls whose behavior was persistently socially acceptable and productive. In all, 1550 children were nominated, 568 as aggressive-disruptive and 982 as displaying socially acceptable and productive behavior. Each teacher was also asked to check on a list of high and low aggressive behavior traits those which he had consistently observed in each child nominated. This yielded two scores, one for high and one for low aggressive misbehaviors. The overall instrument was called The Behavior Problems Checklist (Figure 1), and the two aggressive scores combined was called The Behavior Problems Checklist Score.

From each group of nominees, one hundred and ninety-two were drawn for intensive individual study by trained social workers and psychologists who interviewed the parents and the youngsters and administered a battery of tests to the youngsters. There was equal representation by sex, grade, and home location as urban or rural. Three psychological tests - the Kvaraceus

Figure 1

EAU CLAIRE COUNTY YOUTH STUDY
BEHAVIOR RATING FORM

	Name	Negative Characteristics
1-AG Name of Girl Whose Behavior is Most Approved	_____	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
1-AB Name of Boy Whose Behavior is Most Approved	_____	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
2-AG Name of Girl Whose Behavior is 2nd Most Approved	_____	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
2-AB Name of Boy Whose Behavior is 2nd Most Approved	_____	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

LIST OF NEGATIVE CHARACTERISTICS (BEHAVIOR PROBLEMS CHECK LIST)

DIRECTIONS: Circle the numbers after each name for the characteristics which are found consistently or frequently in the behavior of each of the eight students.

1. quarrelsome	7. lies	13. talks back
2. sullen	8. destructive	14. cruel
3. rude	9. disrupts class	15. tardy or absent without excuse
4. defiant	10. is a bully	16. profanity or obscenity
5. resentful	11. has temper tantrums	17. fights with other pupils
6. steals	12. overly dominant	18. deceptive

2-DG Name of Girl Whose Behavior is 2nd Most Disapproved	_____	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
2-DB Name of Boy Whose Behavior is 2nd Most Disapproved	_____	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
1-DG Name of Girl Whose Behavior is Most Disapproved	_____	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
1-DB Name of Boy Whose Behavior is Most Disapproved	_____	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

High Aggressive Traits: 4, 8, 9, 10, 11, 12, 13, 14, 17

Low Aggressive Traits: 1, 2, 3, 5, 6, 7, 15, 16, 18

Delinquency Proneness Scale (KD Scale, 1950); a set of story frustration exercises similar to the Rosenzweig Picture Frustration Study (1960); and a special sentence completion form were administered to each child individually. Each family was rated using the Glueck social factors (1959); and other family interaction items derived from the Flint, Michigan, Youth Study (1959). Data on academic achievement, intelligence, and personal-social adjustment were taken from school records.

Data obtained from the interviews and tests revealed that the aggressive-disruptive youngsters, as compared with youngsters whose behavior was persistently socially acceptable, were much more delinquency prone; were much lower in intelligence and school achievements as reflected in teacher grades and standardized tests; and had parents who were less effective in supervising, disciplining, in providing affection, and in maintaining family cohesiveness. Also, the parents of these children were far lower in levels of education and occupation; and tended to respond negatively to many aspects of the community, neighborhood, and school.

During Phases II (1964 - 1965) and III (1965 - 1968) further data were secured on the children concerning their contacts with law enforcement, health, and welfare agencies in the community, and their achievement, behavior, and adjustment in school. An effort was also made in Phase III to develop a remedial instruction program in reading as a means of alleviating behavior and underachievement problems of a new group of children who were identified in the same way as the original sample of aggressive-disruptive children.

Question:

d) Were there any hypotheses tested? If so, what were they? If not, what were the major variables of concern and what were their relationships to one another?

Response:

Phase IV represents a logical extension of the research of Phase III, which was a major longitudinal evaluation of the relationships of early classroom behavior and its psycho-social correlates to subsequent law contact, academic performance, and personal-social adjustment. These latter criteria measures were gathered five years after the initial evaluations involving classroom behavior. The results of Phase III suggested that early, consistent, aggressive-disruptive behavior in school was associated with a host of concurrent difficulties for the child in school and at home, being highly related to low academic achievement, subsequent aggressive-disruptive classroom behavior, and frequent contact with law enforcement agencies.

Phase IV had three major research objectives: 1) Extension and confirmation of Phase III findings over the longer period of eight years; 2) Identification of psycho-social educational variables powerful enough to predict the individuals most likely to perform poorly academically, be rated low in personal-social adjustment, and be in contact with law enforcement and various other community agencies; and 3) Development of a system which would permit practical use of prediction formulas for early identification of individuals likely to encounter such difficulties. Specifically answers were sought for the following questions: Eight years after their original nomination as aggressive-disruptive or socially approved, are there significant differences between these groups of youngsters in basic academic achievements, social adjustment, classroom behavior, and in contacts with law enforcement agencies and health and welfare agencies? Can prediction equations be developed and utilized for the early identification of individuals likely to experience difficulty in these areas?

Question:

e) Were there any changes in the structure of the study as described in the grant application? If so, please explain reason for changes.

Response:

No

Methodology

Questions:

a) What kind of subjects were used? Specify age and sex in all cases.
b) How were subjects obtained?
c) What, if any, special controls or experimental design factors were used?

Response:

See response in preceding section relating to subject selection of Phase I, II, and III.

In the current Phase IV investigation, eight years after the original nominations, further information was gathered on all 1550 of the children concerning their school achievements, intelligence, social adjustment, classroom behavior if they were still in school, and contacts with law enforcement and other social agencies.

For the original 3rd and 6th graders, who were either in 12th grade in the current phase or had been graduated, teacher grades for English, science, mathematics, and social studies and Sequential Tests of Educational Progress (STEP) scores for reading, writing, social studies, and mathematics

were obtained. For the original 6th and 9th graders, all of whom are now out of school, rank in graduating class was obtained. The Behavior Problems Checklist was completed by current teachers of the 12th graders. Social adjustment ratings made by their teachers on eight aspects of behavior were available from school records for 12th graders and the graduates. Police and sheriff departments supplied data concerning frequency of recorded contacts for all youngsters in the original study. In addition, data concerning contact with welfare agencies, the juvenile court, mental health agency, and the health department were also secured.

Question:
d) Were there any changes in the methodology of the study as described in the grant application? If so, please explain reasons for these changes.

Response:
No changes.

Results

Questions:
a) What were the specific findings?
b) What is the relationship between the findings and the original hypotheses?

Response: 1. Law Contacts

Table 1.1 indicates the number of subjects known to the police and/or sheriff's departments. The general findings can be illustrated by the data for the children originally nominated in the ninth grade. Seventy-one percent of all the boys and almost 25% of girls originally identified as aggressive-disruptive in the ninth grade had been in contact with the law. The corresponding figures for their socially approved counterparts were 47% and 11% respectively. While these latter figures certainly compare favorably with describing the aggressive-disruptive children, the data in Table 1.1 indicate clearly that large numbers of youth are known to law enforcement agents (a base rate for the study group of ninth graders was 37%). Similar findings are noted for the third and sixth grade. In general, boys are more often in contact than girls, and urban youngsters more often than their rural peers.

Table 1.2 presents the results derived from a different approach to the area involving law contact. In this instance the data are numbers of actual contacts with the law by research subjects rather than presence or absence of such contact by these individuals as in Table 1.1. The results in this form are similar to those noted before. Significant differentiations in

terms of number of contacts are noted when the subjects are divided according to behavior, sex, and grade. More contacts were made by youth whose early behavior was aggressive-disruptive than by those whose behavior had been described as socially approved. In addition, significant sex by behavior interactions were found. The differences in contact were greater between socially approved and aggressive-disruptive males than were the differences between socially approved and aggressive-disruptive females.

Juvenile Court Appearances

The incidence of juvenile court appearances by the research subjects is noted in Table 1.3. In general, juvenile court appearances would indicate the more serious contacts with the law of those shown in Tables 1.1 and 1.2. The relationships involving juvenile court appearances are, as expected, similar to those noted in the previous tables. More aggressive-disruptive than socially approved youngsters have appeared before the juvenile court judge. As one example, it may be noted that aggressive-disruptive boys are from 6 or 7 times more likely to make such an appearance than the socially approved boys. It should be noted that the criterion is less appropriate for subjects who were in ninth grade when first nominated since they would have been 22-24 years old when the final criterion data were collected, thus putting them beyond the age of juvenile court.

Correction Contacts

Contact with a corrections agency in the form of probation or parole represents an extension of the seriousness of the offense continuum noted in connection with Table 1.4. In short, people known to a corrections worker have not only appeared in juvenile court but have been adjudged as guilty of an offense. The relationships noted previously continue to hold, with the exception of urban or rural location. More aggressive-disruptive than socially approved, and more boys than girls are under the supervision of corrections worker. However, there were no consistent nor substantial differences between urban or rural youngsters in the likelihood of their being known to a corrections agency.

Prediction of Law Contacts

Figure 2 provides an identification coding of predictor variables analyzed in the Discriminant Function tables as well as the Regression Analyses which follow.

Table 1.5 identifies predictors of law contact which were available to the researchers during Phase I of the study, while Table 1.6 includes the findings of a comprehensive analyses of all predictor data available in Phase I and subsequently in Phase III. Sex, behavior status, location, chronological age, and intelligence proved to be significant predictors in both analyses. In addition to these five predictor variables, the low aggressive traits assessed in Phase I, were identified as significant

Figure 2

Identification by Number of Predictor Variables

(For Use With Discriminant Function and Regression Analyses)

1. Grade: 3, 6, 9, when first nominated for study in 1961 or 1962
2. Sex: male, female
3. Behavior: socially approved, aggressive-disruptive
4. Location: rural, urban
5. Chronological age
6. High aggressive behavior traits (phase I - 4, 8, 9, 10, 11, 12, 13, 14, 17)*
7. Low aggressive behavior traits (phase I - 1, 2, 3, 5, 6, 7, 15, 16, 18)*
8. Glueck Scale: total score
9. Situation exercises: total score
10. Sentence completion (Behavior Scale score)
11. Kvaraceus Delinquency Proneness Scale (KD): total score
12. KD area 1: school
13. KD area 2: fears, failure, frustration, conflict, worry
14. KD area 3: peers, recreation
15. KD area 4: future, occupations
16. KD area 5: personal preferences
17. KD area 6: family, adults, authority
18. Reading achievement score
19. Arithmetic achievement score
20. IQ
21. High aggressive behavior traits: (phase III, May 1, 1965 - April 30, 1968)
22. Low aggressive behavior traits: (phase III, May 1, 1965 - April 30, 1968)
23. Social adjustment
24. Teacher grade: Average for English, Science, Mathematics, Social Studies (phase III)
25. Occupational level of father
26. Occupational level of mother
27. Educational level of father
28. Educational level of mother
29. Mother's approval of child
30. Ways mother wants child to be different from her
31. Mother's reaction when child disobeyed
32. Mother's use of spare time
33. Child's behavior of which mother disapproved
34. Mother's perception of negative group influences on child

* See Behavior Problems Checklist, Figure 1.

predictors when they became available. The only other data gathered subsequent to Phase I that contributed significantly to prediction was Phase III teacher grades (an average of grades in English, science, mathematics, and social studies).

In the tables and discussion to follow subjects identified as "intensives" are those on whom complete testing, interviewing, and data gathering were done. Subjects identified as "nominees" did not undergo the intensive testing and interviewing conducted in 1961 and 1962.

In each analysis the predictive factors were applied first to the sample from which they were derived and then to a new, independent sample.

The analyses for the prediction of law contact using predictors gathered in Phase I (1961 - 1962) are presented in Table 1.5. The criterion of law contact was assessed eight years after the predictors. There were 150 intensives available from the 1961 sample to use in the derivation analysis and 154 available from the 1962 sample to use for cross validation. The F ratio for the derivation analysis, 9.35, was significant at the .001 level. There were eight significant predictors. When the resulting equation was applied to the sample from which it was derived, 79 percent of contacts or no contacts were correctly predicted. When the equation was applied to the cross-validation sample, 73 percent of contacts or no contacts were correctly predicted. A chi-square analysis was used to test the departure of the hit-and-miss table from chance. The chi-square of 27.64 is significant.

There were 440 nominees available from the 1961 sample to use in the derivation analysis and 474 from the 1962 sample to use for cross-validation. The F ratio for the derivation analysis, 21.62 was significant at the .001 level. There were four significant predictors. When the resulting equation was applied to the derivation sample, 69 percent accuracy was noted in predicting contact or no contact. Application of the equation to the data of the cross-validation sample revealed 67 percent accuracy of prediction. Chi-square analyses indicated significant differences from chance predictions.

In all, 632 nominees and intensives of the 1961 sample were available for the derivation analysis, and 666 nominees and intensives of the 1962 sample for the cross-validation analysis. The F ratio of 26.277 was significant for the derivation analysis at the .001 level. Six significant predictors were identified. Application of predictive equation to derivation samples and cross-validation samples revealed accuracies of prediction of 71 percent and 69 percent respectively. Chi-square analysis of the cross-validation sample yielded a value of 95.79 thus indicating a significant difference from chance.

Comparable analyses utilizing Phase I predictors plus the additional predictors gathered in Phase III, are presented in Table 1.6. The accuracy of predictions in cross-validation samples ranged from 69 percent to 74 percent.

Prediction of Juvenile Court Appearances

Tables 1.7 and 1.8 indicate the significant predictors of juvenile court appearances and the accuracy of the predictions. Table 1.7 is restricted to those predictor variables available in Phase I, while Table 1.8 includes additional Phase III predictor variables of low and high aggressive traits, teacher grades (average for English, science, mathematics, and social studies), and social adjustment. As compared to the number of significant predictors of law contact, the predictors of juvenile court appearances are indeed few in number. Considering the total sample, Table 1.7 reveals that sex and low aggressive traits (Phase I) have predictive capabilities. Table 1.8 which includes predictors made available in Phase III indicates these changes: sex as a predictor variable is eliminated while the variables of Phase III low aggressive traits and teacher grades are added as predictor variables.

The analyses for the prediction of juvenile court appearance using predictors gathered in Phase I (1961-62) are presented in Table 1.7. The criterion of court appearance was assessed eight years later. There were 150 intensives available for the derivation analysis and 154 for the cross-validation analyses. The F ratio for the derivation sample of 22.99 was significant at the .001 level. One predictor, low aggressive traits, was identified. When the resulting predictive equation was applied to the derivation and to the cross-validation samples, accuracies of prediction of 76% and 69% respectively, were noted. Analysis of the cross-validation sample revealed a chi-square value of 12.78 thus indicating a significant departure from a chance prediction.

Similar analyses were applied to the data deriving from 440 and 474 nominees in the derivation and cross-validation samples. The F ratio for the derivation sample of 17.21 was significant at the .001 level. Two predictors, sex and low aggressive traits, were identified. Application of the predictive equation to the data of the derivation sample yielded a prediction accuracy of 82 percent. Application to the cross-validation sample revealed an accuracy of 80 percent. Chi-square analysis of the data of this sample produced a chi-square value of 42.93 indicating a significant departure from chance predictions.

Comparable results were forthcoming when the same procedures were applied to the 632 intensives and nominees of the derivation sample and the 666 of the cross-validation sample. Seventy-eight percent and 76 percent accuracies of prediction, respectively, were noted. The chi-square value of 80.81 derived from the data of the cross-validation sample indicates a significant difference from chance predictions.

Comparable analyses using Phase I and Phase III predictor variables are reported in Table 1.8. The accuracy of predictions in cross-validation samples ranged from 77 to 85 percent.

Response: 2. Academic Achievement

The results in Table 2.1 present strong evidence for the hypothesis of a relationship between early behavior in school and later academic performance and dropout. Disregarding transfers and considering only the socially approved vs. aggressive-disruptive distinction the following finding emerges: Of the socially approved, over 87 percent either had been graduated or were still in school while only 68 percent of the aggressive-disruptive were either in school or had been graduated.

Rank in High School Graduating Class

Table 2.2 provides information on the question of whether or not the previously cited relationship of early behavior to remaining in school or graduating also extends to rank in graduating class. The analysis of covariance revealed significant differences on all major variables of the study. Children originally designated as socially approved graduated with a mean rank of 63.81 as compared to a mean rank of 40.65 by their aggressive-disruptive counterparts.

The interaction of behavior by grade is significant. Socially approved subjects graduated at a significantly higher level than aggressive-disruptive subjects at each of the three grade levels. However, the difference is greatest for the original ninth grade subjects. The interaction of behavior by location is also significant. Socially approved subjects graduated at a significantly higher level than aggressive-disruptive subjects in both urban and rural areas. The difference is greater for the urban subjects.

Teacher Grades in Mathematics and English

The analyses of covariance of Tables 2.3 and 2.4 revealed that socially approved children had significantly higher mathematics and English grades than the aggressive-disruptive group.

The interaction of behavior by grade is significant in both English and mathematics grades. Socially approved subjects were graded at a significantly higher level than the aggressive-disruptive subjects at each of the three grade levels. However, the difference is greatest for the ninth graders.

The interaction of behavior by location was significant for English grades. Socially approved subjects received significantly higher English grades in both urban and rural locations. However, the difference was significantly greater in the urban area.

SCAT Scores (School and College Abilities Test)

Tables 2.5, 2.6, and 2.7 contain the mean SCAT scores, standard deviations, and the anacovas for Total Score, Quantitative Scores, and Qualitative Scores presented in terms of the major independent variables. In all three cases, significant differences were noted on the basis of behavior and grade with the approved scoring higher than the aggressive-disruptive, and the higher grades in general exceeding the lower grades. Girls were exceeded by boys in performance in the quantitative area. Location was not considered in this analysis.

For SCAT Verbal and Total Score, there is a significant behavior by grade interaction. In general, the approved subjects' performances exceed those of their aggressive-disruptive counterparts. These differences are most marked in grade nine.

STEP (Sequential Test of Educational Progress)

Tables 2.8 through 2.12 contain means, standard deviations and anacovas of STEP science, mathematics, reading, writing, and social studies scores presented in terms of the major research variables of this study. In all tables with but one exception significant differences were noted between groups divided on the basis of behavior, grade, and sex. In all areas, approved scores were higher than disapproved. Differences were forthcoming in terms of grade in all areas except science. Differences according to grade usually favored the original ninth graders except in the case of social studies where the performance of the third graders was the best. Differences on the basis of sex indicated superiority for girls in reading and writing; and superior performance by boys in science, mathematics, and social studies.

The interaction of behavior by grade is significant in both science and mathematics STEP scores. Socially approved subjects scored at a significantly higher level than the aggressive-disruptive subjects at each grade level. The difference is greatest for the ninth graders. The interaction of sex by behavior is significant in the case of mathematics. The approved subjects' performance exceeds that of their aggressive-disruptive counterparts. These differences are most marked in the case of boys.

Prediction of SCAT Scores

Figure 2 provides an identification coding of predictor variables included in Tables 2.13 through 2.30.

Tables 2.13, 2.14, and 2.15 contain the regression analyses for the prediction of SCAT scores using Phase I predictors for intensives, nominees, and total group respectively. In Table 2.13, it was found that Glueck Scale total scores, reading achievement score, IQ, and maternal reaction to disobedience produced an R of .70 with total SCAT score. For the

nominees (Table 2.14), the R was .84 for this same criterion with the predictors of grade, behavior status, and IQ. The same score predictors (Table 2.15) were the optimum set when the intensives and nominees were considered together with an R of .81 with the total SCAT score.

Tables 2.16, 2.17, and 2.18 contain analyses similar to those of the previous three tables except that they include the additional predictor variables acquired in Phase III. In Table 2.16 it was found that the optimum set of predictors for SCAT total score were arithmetic achievement score, low aggressive behavior traits (Phase III), teacher grades (Phase III), and the ways in which the mother wants child to be different from her. These predictors produced an R of .84 with the SCAT total score. For the nominees in Table 2.17, it was found that the optimum predictors of Total SCAT score (R=.84) were grade, sex, low aggressive traits (Phase I), and teacher grades (Phase III). Considering intensives and nominees together in Table 2.18, it was found that the optimum predictors were sex, chronological age, IQ, and teacher grades (Phase III). These predictors produced an R of .85 with the SCAT total score.

Prediction of STEP Scores

Tables 2.19, 2.20, and 2.21 present data regarding the prediction of five STEP scores. In Table 2.19, considering intensives, the R's ranged from .47 for social studies to .72 for reading. In the cases involving nominees (Table 2.20), the range of R's was from .70 to .78 were noted. In the total sample, R's ranging from .66 in social science and science to .76 in writing were obtained. Overall the predictive factors most often noted were sex, behavior, chronological age, and IQ.

Tables 2.22, 2.23, and 2.24 provide the analyses which contained Phase III predictors in addition to those noted in Tables 2.19, 2.20, and 2.21. R's ranged from .52 in science to .83 in reading for intensives (Table 2.22), and .73 (science) to .82 (writing) for the nominees (Table 2.23). Considering the total sample, the R's ranged from .68 for science (Table 2.24) to .79 for writing. Sex, IQ, and teacher grades appeared most frequently in the optimum predictor sets. Behavior, which was a significant predictor before, was no longer included when Phase III predictors became available.

Prediction of High School Rank

Tables 2.25 through 2.30, which are addressed to the prediction of high school rank, parallel the approach previously noted in the prediction of SCAT and STEP scores. The first set of three tables relies upon Phase I predictors and the second set utilizes factors available in Phases I and III. In each set, the intensives are studied, then the nominees, and finally the total group. Sex, behavior, and IQ are consistent predictive factors of Phase I. When Phase III data become available, the only one of these remaining as a predictor is IQ and this is not found in the case of intensives. As would be expected, teacher

grades (which are generally used to determine high school rank) emerged as a significant predictor. Social adjustment was also noted as a significant predictor. R's in the .70's were noted in the tables involving Phase I data alone, and in the .88 to .91 range when utilizing Phase I and Phase III predictors.

Response: 3. Social Adjustment

Behavior Traits

Table 3.1 shows the means for the low aggressive behavior traits and their standard deviations and accompanying analysis of variance. There are data from the Behavior Problems Checklist which was completed by the teachers of the original (Phase I) third graders who were in grade eleven or twelve during Phase IV. Significant relationships were noted for behavior and for sex. Girls manifested fewer of these traits than boys, and socially approved children fewer than aggressive-disruptive. Similar relationships were noted in the case of high aggressive behavior traits (Table 3.2) and for high and low aggressive traits combined (Table 3.3).

Social Adjustment

Mean social adjustment scores, standard deviations, and analysis of variance for social adjustment are shown in Table 3.4. For the original (Phase I) third grader these ratings were made by their teacher about 8 years after nomination; for the sixth grader, 5 or 6 years; and for the ninth grader, 2 or 3 years after nomination. Grade, sex, and behavior status are related to social adjustment. Original ninth graders score higher ("better") than sixth graders who in turn score higher than third graders; socially approved score higher than aggressive-disruptive; and girls score higher than boys. Significant grade by behavior and sex by behavior interactions are noted.

Socially approved subjects had social adjustment scores which were significantly higher than the aggressive-disruptive subjects at each of the three grade levels. The difference between these two groups is greatest for the third graders.

The interaction of behavior by sex is also significant. Socially approved boys and girls both received higher social adjustment scores. However, the difference is greater for the boys.

Prediction of Behavior Traits

Tables 3.5 through 3.7 deal with predictor variables derived during Phase I of this investigation. In Table 3.5, which deals with intensives, behavior status is most consistently related to Phase IV behavior traits, being included in an optimum set of predictors for low aggressive traits and total behavior traits. Phase I high aggressive traits and mothers

aspirations regarding her child are predictive of later high aggressive traits. In Table 3.6 Phase I chronological age, high aggressive traits, and IQ are predictive of total behavior traits in the nominees. Table 3.7 which deals with predictions involving the entire sample (intensives plus nominees) shows sex, age, high aggressive traits, and IQ as the optimal predictors of total behavior traits. Considering only total behavior traits, the R's range from .34 to .48.

Tables 3.8 through 3.10 contain predictor variables secured during Phases I and III. High aggressive traits (Phase III) constituted the optimum predictor set for high aggressive, low aggressive and total behavior traits in the intensive group (Table 3.8). In Table 3.9 chronological age, high aggressive behavior traits (Phase I) and (Phase III) and social adjustment are predictive of the total behavior traits in the nominees. For the total sample (Table 3.10) behavior, high aggressive traits (Phase III) and social adjustment constitute the predictor set. When considering total behavior traits, the correlations ranged from .58 to .72.

Prediction of Social Adjustment

Tables 3.11, 3.12, and 3.13 identify the optimum predictors (Phase I) of social adjustment for intensives, nominees, and total sample. No predictors in common were noted for intensives and nominees. Correlations ranged from .64 to .66. Using the total sample (Table 3.13), it was found that grade at time of nomination, sex, behavior, status, location, and IQ constituted the optimum set of predictors. Of these behavior status and IQ had the highest simple correlations with the criteria.

Tables 3.14, 3.15, and 3.16 provide information derived from the regression analyses also addressed to the prediction of social adjustment but with the addition of Phase III predictor data. Teacher grades and social adjustment constituted the predictor set for the total sample. Correlations for the various samples ranged from .72 to .84.

Response: 4. Health and Welfare

These findings describe the demands which the aggressive-disruptive and socially approved youngsters in the study make upon the county guidance clinic, the county department of public welfare, and the city-county health department. A review of Tables 4.1, 4.2, and 4.3 shows that in all areas proportionately greater demands are made upon the agencies by the aggressive-disruptive children than by the socially approved children. This information is provided to indicate yet another facet of the special continuing community problem posed by the aggressive-disruptive youngster.

Question:
c) What is the relationship of the findings to other pertinent work in this field?

Response:
The substantial and significant findings confirm and extend the research findings of Kvaraceus (1966), Quay (1965), Glueck and Glueck (1959), Cureton (1970), MacIver (1966), The Task Force on Juvenile Delinquency (1967), Briggs (1962), Caplan (1965), Balow (1966), Wattenberg (1966), Stott (1960), Eichorn (1966) and many others which indicate that early persistent behavior problems in school are associated with delinquency, low intelligence and achievement, and poor social adjustment.

These research results emphasize the relationship between school misconduct and delinquency, inferior academic achievement, and contacts with law enforcement and health agencies. This research provides a practical means not only of identifying factors associated with these eventual difficulties but of identifying the individuals likely to encounter such problems.

Significance of Research

Question:
a) Where do we go from here in terms of research focus? What theoretical implications do the findings indicate?

Response:
In the course of this longitudinal research effort from 1961 to the present, numerous large-scale and theoretical problems have been encountered. Some of these problems have been solved. Others have only been defined as a prelude to solution. A brief review of some of these problems might be of some value to current delinquency researchers or to others who are planning delinquency research.

The Need for Longitudinal Studies

The first problem noted in this field of research is the paucity of true longitudinal studies. Concurrent and cross-sectional studies in which data on predictor "causes" and "effects", or "outcomes" are gathered simultaneously at the usual approaches. These methods provide no empirical way of ascertaining the course, or process, or cause and effect. While the longitudinal study may sometimes leave some doubt, it probably warrants stronger conclusions of causality when the data involving prediction and cause are gathered some time before the criterion data involving "outcomes".

Single Predictors vs. Multiple Predictors

A second major problem generally noted in delinquency research involves the analysis of predictor variables one at a time, with no provision for

assessment of interrelationships among predictors. Analyses of variance, "t" tests, and simple correlations have been the statistical procedures usually employed. In these analyses one predictor is examined in relation to one criterion variable at a time. Since many modern researchers have both multiple predictors and criteria, the number of statistical tests to be run is little short of overwhelming. All of this represents antiquated, and surely questionable statistical methodology.

Adequacy of Criteria of Delinquency

A third problem involves criteria. What measure will be used to assess and represent the problem or problems under consideration? There has been much discussion and research on the criterion problem in delinquency research (Sellin and Wolfgang, 1964). The delinquency researcher is faced with choosing from a number of potential delinquency criteria the one or several that he feels will be most adequate for his purposes.

The delinquency index in Phase I of our research took the form of teacher nominations of classroom behavior as either consistently socially approved or aggressive-disruptive. In Phase II and III, 1964 - 1968, the criteria of delinquency became appearance on police or sheriff records, classroom behavior as observed by teachers, personal and social adjustment as rated by teachers, and standardized academic achievement test scores. In general, all of the criterion assessments after the initial interviews in 1961 and 1962 have been unobtrusive measures of the type proposed by Webb, Campbell, Schwartz, and Sechrest (1966).

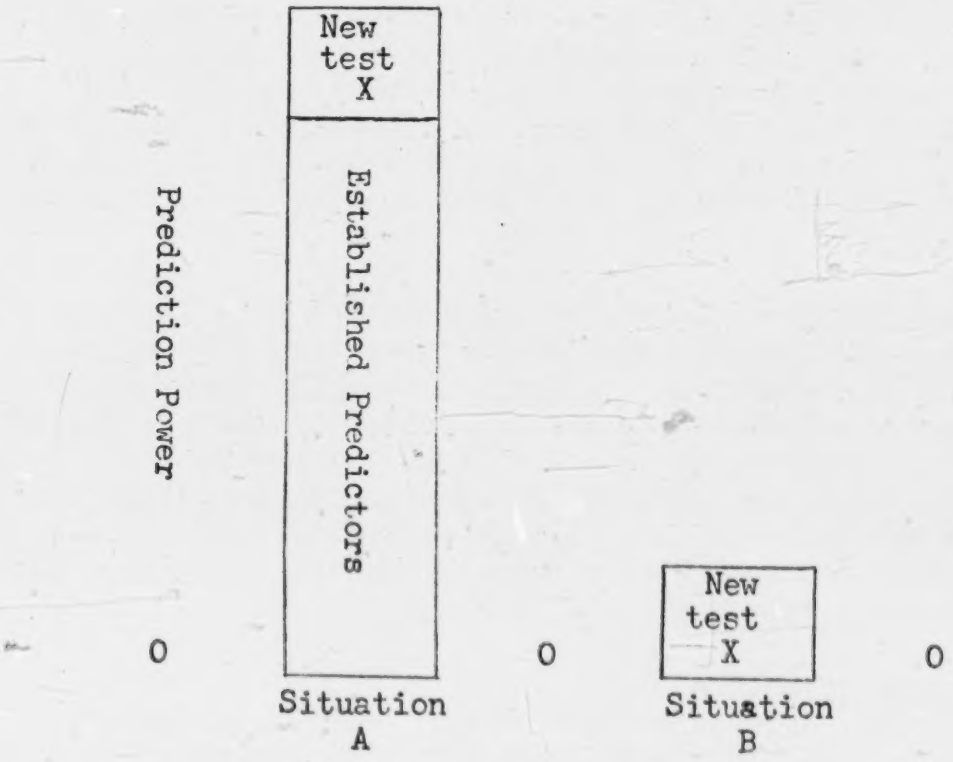
The Basis of Predictor Selection

The fourth problem, closely related to the problem of criteria selection, is that of selecting predictors. If one operates from a concise theoretical base, the selection of predictors should be dictated by this theory. However, this approach is rare in delinquency research. Most researchers operate eclectically, and perhaps too intuitively, on the basis of their experiences or knowledge of previous research and instrumentation. There is also often an over-reliance on psychological assessments for delinquency predictors and a neglect of direct behavioral observations. Bloom (1964) has presented empirical evidence that the best predictors of a behavior will be prior assessments of the same or closely related behaviors.

The Contribution of a New Predictor

A fifth problem is that new predictors are often evaluated without reference to prior developments. Many researchers develop prediction instruments as though they were the first to undertake the prediction problem. That is, researcher X finds or develops a test, selects a criterion, draws a sample, and asks, "Will my test predict delinquency?" This is the characteristic approach in too much delinquency research. It is comparable to inventing the wheel over and over again. Many instruments have been

found to be predictive of delinquency. But the critical question is, "Does this new test of measure add to our prediction power?" The new test might correlate .40 with a delinquency criterion, but if its variance overlaps substantially with the prediction variance already contributed by some other test, little has been gained. Diagrammatically, the problem is this:



Situation A shows the ideal approach in which we ask if new test X builds prediction power higher than we can accomplish with established predictors. Situation B, undesirable, merely asks, "Do the predictors exceed those which could be expected on the basis of chance?"

Prediction of Individual Delinquency

The next problem involves the lack of true longitudinal prediction, person by person, in delinquency research. In most research, prediction does not mean prediction of the eventual behavior of individuals. The effort stops far short, usually with the sample mean, standard deviation, "t" test of the analysis of variance. But the question should be: "What do you predict for this new group of children? Specifically, what do you predict for Anne, Amy, Jody, Geoffrey, or Jeanne?" In short, prediction research should ultimately be carried through to the point of making specific predictions involving individuals, and then assessing the accuracy of these predictions. Research techniques to help make such

specific predictions have been available for a long time. Yet they are only rarely used by delinquency researchers.

Sophisticated Statistics and Delinquency Prediction

Several problems involving delinquency research could be resolved through use of complex statistical procedures such as multiple regression analysis, multiple discriminant function analysis, principal components analysis, and canonical factor analysis. In general, it is suggested that a major problem in delinquency prediction research is the failure of researchers to use some of these advanced techniques for data analysis and reduction. Most of the problems talked about so far can be solved only by moving to these relatively newer techniques. We say "newer" while recognizing that all of these techniques have been available for a long time.

Research on the prediction of delinquency and related behavior problems can be improved immensely if many researchers can be induced to step out of the horse-and-buggy age of calculators and "t" tests into the age of computers and multivariate analyses. The ideas championed herein will require the use of the computer because the calculations are complex and extensive. Hopefully, through the use of these methods and tools more accurate predictions of behavior problems can be developed. Then the prevention of delinquent behaviors can be attempted with greater assurance than is currently the case.

In the Eau Claire County Youth Study some progress has been made in identifying the long-range correlates of aggressive-disruptive behavior and delinquency. Statistical and computerized techniques for prediction of aggressive-disruptive behavior, delinquency, school achievement, social adjustment and problem contacts with social agencies have been developed. This research also provides diagnostic information which may be useful in planning delinquency prevention and remedial programs. But much work remains to be done.

Question:

b) What are the practical implications of these findings (for treatment of patients, etc.)?

Response:

The results of this research have numerous important implications. Ten areas deserve special discussion.

First, the research has demonstrated that early persistent aggressive-disruptive behavior in school is highly predictive of a host of later problems, notably delinquency, low academic achievement, and poor social adjustment.

Second, teachers can make reliable identification of the early behavior problems which are predictive of later difficulties.

Third, children who are aggressive-disruptive have significantly lower IQs, but even when this is taken into account their academic achievements are significantly lower than socially approved youngsters. Intervention programs to prevent delinquency must provide massive academic remediation.

Fourth, the potential delinquent is a product of defective home conditions. Affection, good supervision, and family cohesiveness are lacking. The parents are of relatively low educational backgrounds and occupational status. They rarely discuss problems of rearing the child. Efforts to prevent delinquency must involve substantial work with the family.

Fifth, teachers need to learn more effective techniques for working with the aggressive-disruptive child. A persistent hostile standoff probably characterizes the situation in many classrooms. Teachers often lack sensitivity to the aggressive-disruptive child's personal problems and they often do not know how to help him. The new behavior modification methods show unusual promise for therapy by teachers in the classroom.

Sixth, the school social workers and counselling staff should take the lead in coordinating efforts to identify aggressive-disruptive youngsters and to provide therapy for the child and family.

Seventh, the prediction systems developed in this research (see Prediction Manual, attached) could be used, as is, in other settings but a well planned evaluation of their accuracy would be necessary. It would be preferable to develop new prediction equations in new settings. The predictor variables and the criteria used in this study could be a starting point for those who wish to develop prediction systems elsewhere. Sophisticated statistical methods and access to computers for data processing are essential.

Some people express concern about the dangers of labelling and self-fulfilling prophesy in delinquency prediction. Little evidence exists to support this fear. Short term studies support this possibility. That is, told that a child has a low IQ a teacher's immediate teaching effort might be affected. But over months or years such effects are less likely to persist. The well known Pygmalion study by Rosenthal (1968) which seemed to reveal long term labelling effects has been discredited (Elsahoff & Snow, 1972).

Eighth, this research has explored hundreds of correlates of aggressive-disruptive and delinquent behavior. These correlates can be used effectively

as diagnostic tools to plan remediation and prevention programs. For example, Phase I findings indicated that the aggressive-disruptive child's family participated very little in school or community activities. Recent results from Project Follow Through indicate that if parents are effectively involved in school and community activities, the child's progress in school improves. Phase III results showed that aggressive-disruptive children often have poor social adjustment. This suggests that the service of counselors or a guidance clinic may be helpful. These two illustrations are but two from among hundreds which might be identified as diagnostic aids for delinquency prevention growing out of this research.

Ninth, the present research indicates clearly that the emergence of delinquent behavior can only be understood through long-range longitudinal research. Cross-sectional studies which often used institutionalized delinquents are far less effective. It is ideal to begin studying children before severe problems emerge.

Tenth, and finally, it is sad but true that long-range longitudinal research of this type is accomplished only through the unusual determination and persistence of the researchers in spite of a seemingly endless succession of obstacles and problems. The latter include difficulties in communication with associated agencies, persistent hassles with accountants, and unappreciative consumers of the research. But in spite of these difficulties the present researchers have been amply reinforced by many strong positive reactions from fellow researchers, school personnel, journal editors who accept manuscripts, program committees who accept papers for professional meetings, and the staff of the Juvenile Delinquency Division of the National Institutes of Mental Health.

Dissemination of Results

a) List publications, speeches or papers that resulted from this research.

Response:

For complete bibliography of publications and presentations see page vi.

Papers have been submitted and accepted for the programs of the American Educational Research Association, the American Psychological Association, or the National Council for Measurement in Education every year since 1963. We will continue to submit papers based on these Phase IV results through next year.

Members of the staff have also made presentations to local, state and national groups who are particularly interested in delinquency such as social workers, teachers, guidance directors, parent groups, the

Council for Exceptional Children, and the American Congress for Corrections.

We have regularly published several research articles each year throughout the project. Several new manuscripts are in progress based on Phase IV results.

Reports, reprints, and papers have been distributed in all but four of the fifty states and to a number of foreign countries including Australia, Austria, Belgium, Canada, England, Germany, Israel, New Zealand, Norway, Philippines, Poland, Sweden, Switzerland, and Venezuela. These reports, reprints, and papers have been sent chiefly at the request of universities, schools, research centers, libraries, social agencies and to interested individuals, or as a matter of professional courtesy in return for reference material received. The mailing list at the close of the project numbers more than eight-hundred.

Follow-Up

Question:

a) Do you plan to do further research in this area?

Response:

No further plans are being made for research by Professors Thurston and Benning or Mrs. Ager. However, Professor Feldhusen is interested in continuing longitudinal research in the area of delinquency and in developing a new intervention project. He has written to and discussed these plans on several occasions with Dr. Shah and his staff and with several people in the justice department. Two preliminary-draft proposals have been developed. However, at this time it is still uncertain as to what direction, if any, future research will take.

Question:

b) Do you know of any other researchers that are using your techniques, or planning to replicate this type of study?

Response:

During the ten years of this research we have been in correspondence with many researchers who have expressed an interest in using one or another aspect of our research in projects they were planning or administering. It should be noted, that many merely requested information and showed no signs of specific use of Youth Study findings.

Most recently we have supplied information to projects in England; Brussels, Belgium; Louisville, Kentucky; Riverside, California; Albert Lea, Minnesota; and Tulsa, Oklahoma which we believe is being or will be used in projects.

We know of no one who is currently planning to replicate our study.

Questions:

c) Do you have any suggestions concerning what other scientists might research in this area in the future and how they might go about it?

d) Are there specific methodological and other difficulties which should be particularly emphasized?

Response:

The reader is referred to the answer to the question involving future research focuses under Significance of Research.

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Table 1.1

Number and Percentage of Subjects Known to Law Enforcement-Police-Sheriff According to Original Grade, Behavior Status, Sex, and Location

Group	Soc. App. Boys	Agg. Disrp. Boys	Soc. App. Girls	Agg. Disrp. Girls	All Males	All Females	All Soc. App.	All Agg. Disrp.	All Urban	All Rural	Total
Third Grade Subjects Known	27	57	12	15	84	27	39	72	79	32	111
% Known	16%	49%	7%	18%	29%	11%	11%	37%	29%	12%	20%
Sixth Grade Subjects Known	75	87	25	32	162	57	100	119	121	98	219
% Known	43%	77%	14%	36%	57%	21%	28%	59%	45%	34%	39%
Ninth Grade Subjects Known	64	62	15	20	126	35	79	82	136	25	161
% Known	47%	71%	11%	25%	57%	16%	29%	49%	42%	21%	37%
All Grades Subjects Known	166	206	52	67	372	119	218	273	336	155	491
% Known	34%	65%	10%	26%	46%	15%	22%	48%	38%	22%	31%

Table 1.2

Means and Standard Deviations and Analysis of Variance for Law Contacts of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	SD
Soc. App. Grade 3 Males	169	.22	.58
Agg. Disrp. Grade 3 Males	115	.81	.90
Soc. App. Grade 3 Females	182	.09	.38
Agg. Disrp. Grade 3 Females	80	.28	.64
Soc. App. Grade 6 Males	173	.65	.81
Agg. Disrp. Grade 6 Males	113	1.37	.84
Soc. App. Grade 6 Females	184	.16	.44
Agg. Disrp. Grade 6 Females	90	.48	.71
Soc. App. Grade 9 Males	135	.75	.86
Agg. Disrp. Grade 9 Males	87	1.31	.89
Soc. App. Grade 9 Females	138	.13	.40
Agg. Disrp. Grade 9 Females	81	.40	.74

	N	MEAN	SD
Soc. App.	981	.32	.60
Agg. Disrp.	566	.81	.80
Males	791	.77	.80
Females	756	.21	.52
Grade 3	546	.31	.62
Grade 6	560	.61	.70
Grade 9	441	.60	.73
Soc. App. Grade 3	351	.15	.49
Agg. Disrp. Grade 3	195	.59	.80
Soc. App. Grade 6	357	.40	.64
Agg. Disrp. Grade 6	203	.98	.78
Soc. App. Grade 9	273	.44	.67
Agg. Disrp. Grade 9	168	.87	.82
Soc. App. Males	476	.52	.75
Agg. Disrp. Males	315	1.15	.87
Soc. App. Females	505	.13	.41
Agg. Disrp. Females	251	.39	.70

Table 1.2 (cont.)

Analysis of Variance

Source	df	MS	F	p
A - Grade	2	15.17	32.87	.001
B - Sex	1	123.12	266.67	.001
C - Behavior	1	71.32	154.48	.001
A X B	2	7.75	16.78	.001
A X C	2	.60	1.31	
B X C	1	12.31	26.67	.001
A X B X C	2	.10	.22	
Within Cell	1535	.46		

Table 1.3

Number and Percentages of Subjects Known to the Juvenile Court According to Original Grade, Behavior Status, Sex, and Location

Group	Soc. App. Boys	Agg. Disrp. Boys	Soc. App. Girls	Agg. Disrp. Girls	All Males	All Females	All Soc. App.	All Agg. Disrp.	All Urban	All Rural	Total
Third Grade Subjects Known	8	28	3	9	36	12	11	37	30	18	48
% Known	4%	24%	1%	11%	12%	4%	3%	18%	10%	6%	8%
Sixth Grade Subjects Known	10	40	3	14	50	17	13	54	37	30	67
% Known	5%	35%	1%	15%	17%	6%	3%	26%	13%	10%	12%
Ninth Grade Subjects Known	9	36	1	10	45	11	10	46	45	11	56
% Known	6%	41%	1%	12%	20%	5%	3%	27%	13%	9%	12%
All Grades Subjects Known	27	104	7	33	131	40	34	137	112	59	171
% Known	5%	33%	1%	13%	16%	5%	3%	24%	12%	8%	11%

Table 1.4

Number and Percentages of Subjects Known to the Division of Corrections

According to Original Grade, Behavior Status, Sex, and Location

Group	Soc. App. Boys	Agg. Disrp. Boys	Soc. App. Girls	Agg. Disrp. Girls	All Males	All Females	All Soc. App.	All Agg. Disrp.	All Urban	All Rural	Total
Third Grade Subjects Known	2	11	0	3	13	3	2	14	12	4	16
% Known	1%	10%	0%	4%	5%	1%	1%	7%	4%	1%	3%
Sixth Grade Subjects Known	2	16	0	4	18	4	2	20	11	11	22
% Known	1%	14%	0%	4%	6%	1%	10%	9%	4%	3%	3%
Ninth Grade Subjects Known	0	19	0	3	19	3	0	22	17	5	22
% Known	0%	21%	0%	3%	8%	1%	0%	13%	5%	4%	4%
All Grades Subjects Known	4	46	0	10	50	10	4	56	40	20	60
% Known	1%	15%	0%	4%	6%	1%	1%	10%	4%	3%	4%

Table 1.5

Discriminant Analysis for Predicting Law Contacts (Phase I Predictors)

Group	Significant Predictors	F	Derivation Classification				Cross Validation Classification			
				Predicted				Predicted		
Intensives	1	9.35***	Observed	No contact	Contact	Total	Observed	No contact	Contact	Total
	2	(8, 141)								
	4		No contact	88	23	111	No contact	79	29	108
	5									
	6		Contact	8	31	39	Contact	12	34	46
	7					79%[3]	Chi Square[2] = 27.64***, 1 df			73%[3]
	16									
	32									
				Predicted				Predicted		
Nominees	2	21.62***	Observed	No contact	Contact	Total	Observed	No contact	Contact	Total
	3	(4, 435)								
	4		No contact	202	97	299	No contact	199	117	316
	5									
			Contact	40	101	141	Contact	40	118	158
						69%[3]	Chi Square[2] = 58.26***, 1 df			67%[3]
				Predicted				Predicted		
Total Group[1]	2	26.27***	Observed	No contact	Contact	Total	Observed	No contact	Contact	Total
	3	(6, 625)								
	4		No contact	301	133	434	No contact	294	153	447
	5									
	7		Contact	51	147	198	Contact	55	164	219
	20					71%[3]	Chi Square[2] = 95.79***, 1 df			69%[3]

1. Total group includes more subjects than were included in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 6, 7, 11, and 20 and this resulted in less attrition of samples.
2. This chi-square is a test of the departure from chance of the cross-validation.
3. This is the percentage of accuracy of classification for the total group of Ss.

* Significant at the .05 level.
** Significant at the .01 level.
*** Significant at the .001 level.

Table 1.6

Discriminant Analysis for Predicting Law Contacts (Phase I and III Predictors)

Group	Significant Predictors	F	Derivation Classification				Cross Validation Classification			
				Predicted				Predicted		
Intensives	2, 5, 6, 22, 24	16.07*** (5, 94)	Observed	No contact	Contact	Total	Observed	No contact	Contact	Total
			No contact	59	10	69	No contact	52	25	77
			Contact	6	25	31	Contact	9	24	33
						84%[3]	Chi Square[2] = 13.57***, 1 df			69%[3]
				Predicted				Predicted		
Nominees	2, 3, 4, 5, 23	12.37*** (5, 288)	Observed	No contact	Contact	Total	Observed	No contact	Contact	Total
			No contact	149	56	205	No contact	159	70	229
			Contact	29	60	89	Contact	15	80	95
						71%[3]	Chi Square[2] = 75.57***, 1 df			74%[3]
				Predicted				Predicted		
Total Group[1]	2, 3, 4, 5, 20, 22, 24	17.61*** (7, 394)	Observed	No contact	Contact	Total	Observed	No contact	Contact	Total
			No contact	87	35	122	No contact	99	30	129
			Contact	72	208	280	Contact	83	223	306
						73%[3]	Chi Square[2] = 89.79***, 1 df			74%[3]

1. Total group includes more subjects than were included in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 6, 7, 11, and 20 and this resulted in less attrition of samples.
2. This chi-square is a test of the departure from chance of the cross-validation.
3. This is the percentage of accuracy of classification for the total group of Ss.

* Significant at .05 level.
** Significant at .01 level.
*** Significant at .001 level.

Table 1.7

Discriminant Analysis for Predicting Juvenile Court Appearances (Phase I Predictors)

Group	Significant Predictors	F	Derivation Classification				Cross Validation Classification			
				Predicted				Predicted		
Intensives	7	22.99*** (1, 148)	Observed	No appear.	Appear.	Total	Observed	No appear.	Appear.	Total
			No Appear.	100	35	135	No Appear.	89	42	131
			Appearances	1	14	15	Appearances	6	17	23
						76%[3]	Chi Square[2]= 12.78***, 1 df			69%[3]
				Predicted				Predicted		
Nominees	27	17.21*** (2, 437)	Observed	No appear.	Appear.	Total	Observed	No appear.	Appear.	Total
			No Appear.	341	59	400	No Appear.	345	77	422
			Appearances	21	19	40	Appearances	18	34	52
						82%[3]	Chi Square[2]= 42.93***, 1 df			80%[3]
				Predicted				Predicted		
Total Group[1]	27	36.81*** (2, 629)	Observed	No appear.	Appear.	Total	Observed	No appear.	Appear.	Total
			No Appear.	453	117	570	No Appear.	450	133	583
			Appearances	22	40	62	Appearances	24	59	83
						78%[3]	Chi Square[2]= 80.81***, 1 df			76%[3]

1. Total group includes more subjects than were included in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 6, 7, 11, and 20 and this resulted in less attrition of samples.
2. This chi-square is a test of the departure from chance of the cross-validation.
3. This is the percentage of accuracy of classification for the total group of Ss.

* Significant at .05 level.
** Significant at .01 level.
*** Significant at .001 level.

Table 1.8

Discriminant Analysis for Predicting Juvenile Court Appearances (Phase I and III Predictors)

Group	Significant Predictors	F	Derivation Classification				Cross Validation Classification			
				Predicted				Predicted		
Intensives	7	27.76***	Observed	No appear.	Appear.	Total	Observed	No appear.	Appear.	Total
	21	(3, 96)								
	23		No Appear.	81	5	86	No Appear.	76	17	93
			Appearances	4	10	14	Appearances	8	9	17
						91%[3]	Chi Square[2]= 7.74**, 1 df			77%[3]
				Predicted				Predicted		
Nominees	6	14.81***	Observed	No appear.	Appear.	Total	Observed	No appear.	Appear.	Total
	22	(3, 290)								
	24		No Appear.	224	43	267	No Appear.	253	45	298
			Appearances	13	14	27	Appearances	4	22	26
						81%[3]	Chi Square[2]= 66.28***, 1 df			85%[3]
				Predicted				Predicted		
Total Group[1]	7	34.82***	Observed	No appear.	Appear.	Total	Observed	No appear.	Appear.	Total
	22	(3, 398)								
	24		No Appear.	306	54	360	No Appear.	313	78	391
			Appearances	18	34	42	Appearances	17	27	44
						82%[3]	Chi Square[2]= 34.82***, 1 df			78%[3]

1. Total group includes more subjects than were included in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 6, 7, 11, and 20 and this resulted in less attrition of samples.
2. This chi-square is a test of the departure from chance of the cross-validation.
3. This is the percentage of accuracy of classification for the total group of Ss.

* Significant at .05 level.
** Significant at .01 level.
*** Significant at .001 level.

Table 2.1

Number and Percentage of Subjects Who Dropped Out-Transferred-Graduated From Eau Claire County Schools

Group	Soc. App. Boys	Agg. Disrp. Boys	Soc. App. Girls	Agg. Disrp. Girls	All Males	All Females	All Soc. App.	All Agg. Disrp.	All Urban	All Rural	Total
Third Grade											
Dropouts	6	16	4	8	22	12	10	24	9	25	34
% Known	4%	14%	2%	10%	8%	4%	3%	12%	3%	9%	6%
Grad.-In School	140	78	154	56	218	210	294	134	214	214	428
% Known	83%	68%	85%	70%	77%	80%	84%	69%	78%	78%	78%
Transfer	22	20	24	16	42	40	46	36	49	33	82
% Known	13%	17%	13%	20%	15%	15%	13%	18%	18%	12%	15%
Deceased	1	1	0	0	2	0	1	1	1	1	2
Sixth Grade											
Dropouts	9	20	8	10	29	18	17	30	13	34	47
% Known	5%	18%	4%	11%	10%	7%	5%	15%	5%	12%	8%
Grad.-In School	140	74	163	67	214	230	303	141	229	215	444
% Known	81%	65%	88%	74%	75%	84%	85%	69%	85%	74%	79%
Transfer	23	18	14	13	41	27	37	31	29	39	68
% Known	13%	16%	8%	14%	14%	10%	10%	15%	11%	13%	12%
Deceased	1	1	0	0	2	0	1	1	0	2	2
Ninth Grade											
Dropouts	3	30	3	20	33	23	6	50	26	30	56
% Known	2%	34%	2%	25%	15%	11%	2%	30%	8%	25%	12%
Grad.-In School	127	53	129	57	180	186	256	110	282	84	366
% Known	94%	61%	93%	70%	81%	85%	94%	65%	87%	71%	83%
Transfer	5	3	6	4	8	10	11	7	14	4	18
% Known	4%	3%	4%	5%	4%	5%	4%	4%	4%	3%	4%
Deceased	0	1	0	0	1	0	0	1	1	0	1
Total Sample											
Dropouts	18	66	15	38	84	53	33	104	48	89	137
% Known	4%	21%	3%	15%	11%	7%	3%	18%	6%	13%	9%
Grad.-In School	407	205	446	180	612	626	853	385	725	513	1238
% Known	85%	65%	88%	72%	77%	82%	87%	68%	84%	75%	80%
Transfer	50	41	44	33	91	77	94	74	92	76	168
% Known	10%	13%	9%	13%	11%	10%	10%	13%	11%	11%	11%
Deceased	2	3	0	0	5	0	2	3	2	3	5

Table 2.2

Means and Standard Deviations and Analysis of Covariance for Rank in High School Graduating Class of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Rural Males	29	52.41	48.76	31.31
Agg. Disrp. Grade 3 Rural Males	13	33.92	36.95	18.56
Soc. App. Grade 3 Urban Males	25	65.52	56.81	26.21
Agg. Disrp. Grade 3 Urban Males	10	29.80	40.45	17.36
Soc. App. Grade 3 Rural Females	36	61.78	58.19	24.98
Agg. Disrp. Grade 3 Rural Females	9	42.78	50.16	26.22
Soc. App. Grade 3 Urban Females	20	77.55	70.73	18.83
Agg. Disrp. Grade 3 Urban Females	10	35.30	44.47	27.90
Soc. App. Grade 6 Rural Males	61	52.07	52.65	28.96
Agg. Disrp. Grade 6 Rural Males	26	33.73	42.91	27.57
Soc. App. Grade 6 Urban Males	68	63.44	58.31	26.48
Agg. Disrp. Grade 6 Urban Males	40	26.85	35.68	17.35
Soc. App. Grade 6 Rural Females	78	63.27	63.49	24.96
Agg. Disrp. Grade 6 Rural Females	23	43.30	49.00	25.82
Soc. App. Grade 6 Urban Females	72	77.96	72.25	21.02
Agg. Disrp. Grade 6 Urban Females	34	39.47	47.76	26.19
Soc. App. Grade 9 Rural Males	17	77.77	66.46	21.91
Agg. Disrp. Grade 9 Rural Males	11	20.18	28.50	11.36
Soc. App. Grade 9 Urban Males	95	69.56	65.17	25.33
Agg. Disrp. Grade 9 Urban Males	34	24.26	33.12	22.48
Soc. App. Grade 9 Rural Females	17	80.18	76.54	16.02
Agg. Disrp. Grade 9 Rural Females	8	36.00	46.04	29.76
Soc. App. Grade 9 Urban Females	96	74.42	71.70	24.47
Agg. Disrp. Grade 9 Urban Females	38	28.34	40.12	22.97
Soc. Approved	614	67.44	63.81	24.84
Agg. Disrp.	256	31.94	40.65	22.67
Males	429	52.02	51.75	24.87
Females	441	61.84	62.10	23.57

Table 2.2 (cont.)

	N	MEAN	ADJ. MEAN	SD
Grade 3	152	55.33	53.45	24.66
Grade 6	402	55.54	56.28	24.70
Grade 9	316	59.65	59.61	23.41
Rural	328	54.11	54.76	25.35
Urban	542	58.74	58.35	23.51
Soc. App. Grade 3	110	63.03	57.67	25.79
Agg. Disrp. Grade 3	42	35.17	42.40	21.72
Soc. App. Grade 6	279	64.65	62.12	25.21
Agg. Disrp. Grade 6	123	34.87	43.04	23.62
Soc. App. Grade 9	225	73.06	68.92	24.00
Agg. Disrp. Grade 9	91	26.50	36.62	22.03
Soc. App. Rural	238	61.09	59.26	25.93
Agg. Disrp. Rural	90	35.65	42.35	23.89
Soc. App. Urban	376	71.46	66.69	24.15
Agg. Disrp. Urban	166	29.93	39.46	22.06

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	2139.10	5.39	.005
B - Sex	1	23285.66	58.64	.001
C - Behavior	1	80642.78	203.10	.001
D - Location	1	2183.45	5.50	.02
A X B	2	292.24	.74	
A X C	2	4517.29	11.38	.001
A X D	2	873.42	2.20	
B X C	1	31.78	.08	
B X D	1	56.17	.14	
C X D	1	2213.39	5.57	.02
A X B X C	2	148.12	.37	
A X B X D	2	428.82	1.08	
A X C X D	2	710.57	1.79	
B X C X D	1	79.76	.20	
A X B X C X D	2	214.22	.54	
Within Cell	845	397.07		
Regression	1	173684.53	437.42	.001

Table 2.3

Means and Standard Deviations and Analysis of Covariance for Teacher Grades in Math of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Rural Males	59	2.28	2.18	1.07
Agg. Disrp. Grade 3 Rural Males	33	1.51	1.80	.92
Soc. App. Grade 3 Urban Males	60	2.11	1.95	.92
Agg. Disrp. Grade 3 Urban Males	38	1.60	1.84	.76
Soc. App. Grade 3 Rural Females	73	2.34	2.28	.94
Agg. Disrp. Grade 3 Rural Females	19	1.76	2.04	.90
Soc. App. Grade 3 Urban Females	51	2.69	2.52	1.03
Agg. Disrp. Grade 3 Urban Females	28	1.80	2.04	.67
Soc. App. Grade 6 Rural Males	62	2.06	2.04	1.01
Agg. Disrp. Grade 6 Rural Males	31	1.69	1.91	.69
Soc. App. Grade 6 Urban Males	69	2.03	1.87	1.04
Agg. Disrp. Grade 6 Urban Males	43	1.04	1.22	.62
Soc. App. Grade 6 Rural Females	79	2.27	2.25	.97
Agg. Disrp. Grade 6 Rural Females	28	1.86	1.96	.93
Soc. App. Grade 6 Urban Females	73	2.60	2.44	.95
Agg. Disrp. Grade 6 Urban Females	34	1.57	1.75	.76
Soc. App. Grade 9 Rural Males	18	2.91	2.65	1.10
Agg. Disrp. Grade 9 Rural Males	13	1.23	1.43	.72
Soc. App. Grade 9 Urban Males	94	2.51	2.38	.99
Agg. Disrp. Grade 9 Urban Males	44	1.27	1.52	.90
Soc. App. Grade 9 Rural Females	19	2.42	2.29	1.02
Agg. Disrp. Grade 9 Rural Females	10	1.50	1.76	1.08
Soc. App. Grade 9 Urban Females	99	2.50	2.41	.95
Agg. Disrp. Grade 9 Urban Females	45	1.29	1.59	.63
Soc. Approved	756	2.36	2.25	.98
Agg. Disrp.	366	1.48	1.71	.77
Males	564	1.94	1.95	.93
Females	558	2.21	2.20	.91

Table 2.3 (cont.)

	N	MEAN	ADJ. MEAN	SD
Grade 3	361	2.12	2.12	.92
Grade 6	419	2.00	2.00	.91
Grade 9	342	2.12	2.12	.92
Rural	444	2.09	2.11	.95
Urban	678	2.06	2.05	.89
Soc. App. Grade 3	243	2.34	2.22	.98
Agg. Disrp. Grade 3	118	1.65	1.91	.80
Soc. App. Grade 6	283	2.25	2.16	.99
Agg. Disrp. Grade 6	136	1.49	1.66	.73
Soc. App. Grade 9	230	2.53	2.40	.98
Agg. Disrp. Grade 9	112	1.29	1.56	.79
Grade 3 Male	190	1.96	1.97	.93
Grade 3 Female	171	2.29	2.28	.92
Grade 6 Male	205	1.78	1.79	.90
Grade 6 Female	214	2.22	2.20	.92
Grade 9 Male	169	2.13	2.11	.95
Grade 9 Female	173	2.12	2.14	.89
Male Rural	216	2.00	2.04	.96
Male Urban	348	1.91	1.89	.91
Female Rural	228	2.18	2.19	.95
Female Urban	330	2.23	2.22	.88

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	2.08	2.82	
B - Sex	1	19.03	25.88	.001
C - Behavior	1	56.30	76.58	.001
D - Location	1	.75	1.02	
A X B	2	2.76	3.76	.02
A X C	2	6.53	8.88	.001
A X D	2	.50	.68	
B X C	1	.01	.01	
B X D	1	6.04	8.22	.004
C X D	1	1.44	1.96	
A X B X C	2	.55	.75	
A X B X D	2	.33	.45	
A X C X D	2	1.71	2.33	
B X C X D	1	1.00	1.36	
A X B X C X D	2	.76	1.03	
Within Cell	1097	.74		
Regression	1	137.87	187.52	.001

Table 2.4

Means and Standard Deviations and Analysis of Covariance for Teacher Grades in English of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Rural Males	59	2.11	1.97	1.16
Agg. Disrp. Grade 3 Rural Males	33	1.65	2.04	.78
Soc. App. Grade 3 Urban Males	60	2.72	2.50	.92
Agg. Disrp. Grade 3 Urban Males	38	1.53	1.85	.83
Soc. App. Grade 3 Rural Females	73	2.87	2.79	.94
Agg. Disrp. Grade 3 Rural Females	19	2.10	2.48	.88
Soc. App. Grade 3 Urban Females	51	3.26	3.04	.73
Agg. Disrp. Grade 3 Urban Females	28	2.02	2.33	1.02
Soc. App. Grade 6 Rural Males	62	2.11	2.09	.92
Agg. Disrp. Grade 6 Rural Males	31	1.29	1.58	.95
Soc. App. Grade 6 Urban Males	69	2.52	2.31	1.09
Agg. Disrp. Grade 6 Urban Males	43	1.42	1.67	.73
Soc. App. Grade 6 Rural Females	79	2.68	2.66	1.07
Agg. Disrp. Grade 6 Rural Females	28	2.36	2.50	1.05
Soc. App. Grade 6 Urban Females	73	3.16	2.94	.87
Agg. Disrp. Grade 6 Urban Females	34	2.12	2.35	.81
Soc. App. Grade 9 Rural Males	18	2.78	2.43	1.11
Agg. Disrp. Grade 9 Rural Males	13	1.38	1.65	.77
Soc. App. Grade 9 Urban Males	94	2.76	2.58	1.02
Agg. Disrp. Grade 9 Urban Males	44	1.30	1.62	.70
Soc. App. Grade 9 Rural Females	19	3.10	2.93	.66
Agg. Disrp. Grade 9 Rural Females	10	1.40	1.75	.97
Soc. App. Grade 9 Urban Females	99	3.02	2.89	.83
Agg. Disrp. Grade 9 Urban Females	45	1.67	2.07	.85
Soc. Approved	756	2.75	2.60	.95
Agg. Disrp.	366	1.67	1.98	.84
Males	564	2.11	2.12	.94
Females	558	2.69	2.68	.89

Table 2.4 (cont.)

	N	MEAN	ADJ. MEAN	SD
Grade 3	361	2.42	2.42	.92
Grade 6	419	2.35	2.35	.95
Grade 9	342	2.43	2.43	.88
Rural	444	2.29	2.32	.97
Urban	678	2.47	2.45	.88
Soc. App. Grade 3	243	2.73	2.57	.95
Agg. Disrp. Grade 3	118	1.77	2.12	.86
Soc. App. Grade 6	283	2.64	2.52	.99
Agg. Disrp. Grade 6	136	1.76	1.99	.86
Soc. App. Grade 9	230	2.90	2.73	.92
Agg. Disrp. Grade 9	112	1.47	1.82	.78
Soc. App. Rural	310	2.53	2.44	1.00
Agg. Disrp. Rural	134	1.73	2.03	.89
Soc. App. Urban	446	2.90	2.71	.92
Agg. Disrp. Urban	232	1.64	1.95	.81

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	.78	1.22	
B - Sex	1	91.06	141.82	.001
C - Behavior	1	69.90	108.87	.001
D - Location	1	6.92	10.78	.001
A X B	2	2.17	3.38	.03
A X C	2	5.41	8.43	.001
A X D	2	.22	.34	
B X C	1	.01	.02	
B X D	1	.17	.27	
C X D	1	5.27	8.21	.01
A X B X C	2	.87	1.35	
A X B X D	2	.11	.16	
A X C X D	2	1.59	2.47	
B X C X D	1	.13	.20	
A X B X C X D	2	.83	1.29	
Within Cell	1097	.64		
Regression	1	241.98	376.86	.001

Table 2.5

Means and Standard Deviations and Analysis of Covariance for SCAT Total Scores of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Males	82	70.87	67.65	13.28
Agg. Disrp. Grade 3 Males	50	55.46	64.37	16.27
Soc. App. Grade 3 Females	85	69.20	65.67	11.56
Agg. Disrp. Grade 3 Females	31	53.58	61.14	14.51
Soc. App. Grade 6 Males	107	73.75	71.74	17.22
Agg. Disrp. Grade 6 Males	57	58.33	65.56	15.88
Soc. App. Grade 6 Females	114	74.40	71.65	16.25
Agg. Disrp. Grade 6 Females	47	61.68	66.48	18.68
Soc. App. Grade 9 Males	80	82.35	76.95	11.99
Agg. Disrp. Grade 9 Males	35	58.17	64.76	15.80
Soc. App. Grade 9 Females	84	77.02	73.74	15.35
Agg. Disrp. Grade 9 Females	29	55.97	64.70	15.08
Soc. Approved	552	74.50	71.24	14.62
Agg. Disrp.	249	57.50	64.73	16.10
Males	411	69.16	69.59	15.03
Females	390	69.27	68.82	15.16
Grade 3	248	65.03	65.50	13.47
Grade 6	325	69.53	69.86	16.80
Grade 9	228	73.32	72.34	14.20
Soc. App. Grade 3	167	70.02	66.64	12.40
Agg. Disrp. Grade 3	81	54.74	63.13	15.53
Soc. App. Grade 6	221	74.08	71.69	16.69
Agg. Disrp. Grade 6	104	59.84	65.97	17.12
Soc. App. Grade 9	164	79.62	75.30	13.77
Agg. Disrp. Grade 9	64	57.17	64.74	15.36

Table 2.5 (cont.)

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	2892.19	31.90	.001
B - Sex	1	160.30	1.77	
C - Behavior	1	6028.15	66.48	.001
A X B	2	166.70	1.84	
A X C	2	623.86	6.88	.001
B X C	1	33.39	.37	
A X B X C	2	59.38	.66	
Within Cell	788	90.68		
Regression	1	110573.53	1219.44	.001

Table 2.6

Means and Standard Deviations and Analysis of Covariance for SCAT Quantitative Scores of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Males	82	38.32	36.86	7.22
Agg. Disrp. Grade 3 Males	50	28.96	32.98	9.56
Soc. App. Grade 3 Females	85	34.93	33.34	6.74
Agg. Disrp. Grade 3 Females	31	26.55	29.96	7.39
Soc. App. Grade 6 Males	107	33.92	33.01	8.86
Agg. Disrp. Grade 6 Males	57	26.72	29.98	7.89
Soc. App. Grade 6 Females	114	33.11	31.86	7.94
Agg. Disrp. Grade 6 Females	47	26.68	28.84	9.37
Soc. App. Grade 9 Males	80	38.93	36.49	7.64
Agg. Disrp. Grade 9 Males	35	27.91	30.89	8.79
Soc. App. Grade 9 Females	84	34.91	33.42	7.20
Agg. Disrp. Grade 9 Females	29	25.72	29.66	7.33
Soc. Approved	552	35.43	33.96	7.67
Agg. Disrp.	249	27.19	30.45	8.46
Males	411	33.66	33.85	8.23
Females	390	32.04	31.84	7.59
Grade 3	248	33.80	34.01	7.57
Grade 6	325	31.32	31.47	8.42
Grade 9	228	34.07	33.63	7.58

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	544.05	15.52	.001
B - Sex	1	776.78	22.16	.001
C - Behavior	1	1957.32	55.85	.001
A X B	2	86.91	2.48	
A X C	2	40.55	1.16	
B X C	1	18.66	.53	
A X B X C	2	11.85	.34	
Within Cell	788	35.05		
Regression	1	22545.55	643.29	.001

Table 2.7

Means and Standard Deviations and Analysis of Covariance for SCAT Verbal Scores of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Males	82	32.55	30.76	7.36
Agg. Disrp. Grade 3 Males	50	26.90	31.86	8.04
Soc. App. Grade 3 Females	85	34.14	32.18	6.20
Agg. Disrp. Grade 3 Females	31	27.03	31.24	8.33
Soc. App. Grade 6 Males	107	39.83	38.71	9.95
Agg. Disrp. Grade 6 Males	57	31.61	35.04	10.29
Soc. App. Grade 6 Females	114	41.29	39.76	10.01
Agg. Disrp. Grade 6 Females	47	35.00	37.67	11.66
Soc. App. Grade 9 Males	80	44.35	41.34	8.47
Agg. Disrp. Grade 9 Males	35	30.26	33.93	9.39
Soc. App. Grade 9 Females	84	42.06	40.23	9.54
Agg. Disrp. Grade 9 Females	29	30.24	35.11	9.09
Soc. Approved	552	39.17	37.35	8.80
Agg. Disrp.	249	30.38	34.41	9.58
Males	411	35.73	35.97	8.92
Females	390	37.19	36.93	9.18
Grade 3	248	31.26	31.53	7.22
Grade 6	325	38.20	38.39	10.24
Grade 9	228	39.55	39.00	9.04
Soc. App. Grade 3	167	33.36	31.48	6.77
Agg. Disrp. Grade 3	81	26.95	31.62	8.10
Soc. App. Grade 6	221	40.59	39.25	9.96
Agg. Disrp. Grade 6	104	33.14	36.55	10.88
Soc. App. Grade 9	164	43.18	40.77	9.01
Agg. Disrp. Grade 9	64	30.25	34.46	9.18

Table 2.7 (cont.)

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	4357.40	110.46	.001
B - Sex	1	126.80	3.21	
C - Behavior	1	1073.30	27.21	.001
A X B	2	47.00	1.19	
A X C	2	537.45	13.62	.001
B X C	1	6.71	.17	
A X B X C	2	62.41	1.58	
Within Cell	788	39.45		
Regression	1	34301.39	869.51	.001

Table 2.8

Means and Standard Deviations and Analysis of Covariance for STEP Science Scores of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Males	98	35.08	33.57	7.59
Agg. Disrp. Grade 3 Males	56	29.71	33.01	10.57
Soc. App. Grade 3 Females	97	30.35	29.12	6.85
Agg. Disrp. Grade 3 Females	35	25.40	28.36	7.89
Soc. App. Grade 6 Males	107	34.71	33.93	7.46
Agg. Disrp. Grade 6 Males	57	28.68	31.28	7.00
Soc. App. Grade 6 Females	115	30.17	29.10	6.64
Agg. Disrp. Grade 6 Females	47	24.75	26.67	7.16
Soc. App. Grade 9 Males	77	37.52	35.50	7.11
Agg. Disrp. Grade 9 Males	36	27.81	30.48	8.46
Soc. App. Grade 9 Females	83	30.71	29.44	7.05
Agg. Disrp. Grade 9 Females	31	22.90	26.17	6.53
Soc. Approved	577	32.93	31.68	7.09
Agg. Disrp.	262	26.95	29.71	8.10
Males	431	33.27	33.39	7.88
Females	408	28.73	28.61	6.90
Grade 3	286	31.24	31.35	8.02
Grade 6	326	30.61	30.71	7.02
Grade 9	227	31.49	31.21	7.20
Soc. App. Grade 3	195	32.73	31.41	7.21
Agg. Disrp. Grade 3	91	28.05	31.22	9.58
Soc. App. Grade 6	222	32.35	31.43	7.03
Agg. Disrp. Grade 6	104	26.90	29.19	7.04
Soc. App. Grade 9	160	33.99	32.35	7.06
Agg. Disrp. Grade 9	67	25.54	28.48	7.57

Table 2.8 (cont.)

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	33.80	.89	
B - Sex	1	4773.48	125.49	.001
C - Behavior	1	830.97	21.85	.001
A X B	2	10.64	.28	
A X C	2	163.29	4.29	.01
B X C	1	11.73	.31	
A X B X C	2	12.59	.33	
Within Cell	826	38.04		
Regression	1	14652.03	385.18	.001

Table 2.9

Means and Standard Deviations and Analysis of Covariance for STEP Math Scores of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Males	98	31.29	29.33	8.89
Agg. Disrp. Grade 3 Males	56	22.13	26.32	8.66
Soc. App. Grade 3 Females	97	24.84	23.28	8.16
Agg. Disrp. Grade 3 Females	35	18.63	22.40	6.71
Soc. App. Grade 6 Males	107	29.35	28.35	8.90
Agg. Disrp. Grade 6 Males	57	23.65	26.95	7.70
Soc. App. Grade 6 Females	115	24.95	24.58	7.24
Agg. Disrp. Grade 6 Females	47	20.53	22.98	6.81
Soc. App. Grade 9 Males	77	33.51	30.93	6.97
Agg. Disrp. Grade 9 Males	36	22.33	25.73	8.07
Soc. App. Grade 9 Females	83	27.75	26.13	8.04
Agg. Disrp. Grade 9 Females	31	19.36	23.51	4.57
Soc. Approved	577	28.37	26.77	8.06
Agg. Disrp.	262	21.40	24.92	7.33
Males	431	28.25	28.40	8.28
Females	408	24.02	23.86	7.34
Grade 3	286	25.76	25.89	8.32
Grade 6	326	25.53	25.36	7.81
Grade 9	227	27.70	27.34	7.25
Soc. App. Grade 3	195	28.08	26.40	8.51
Agg. Disrp. Grade 3	91	20.78	24.80	7.93
Soc. App. Grade 6	222	27.07	25.89	8.06
Agg. Disrp. Grade 6	104	22.24	25.16	7.28
Soc. App. Grade 9	160	30.52	28.44	7.52
Agg. Disrp. Grade 9	67	20.96	24.70	6.63
Soc. App. Males	282	31.16	29.45	8.38
Agg. Disrp. Males	149	22.76	26.42	8.10
Soc. App. Females	295	25.70	24.21	7.75
Agg. Disrp. Females	113	19.62	22.94	6.19

Table 2.9 (cont.)

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	208.64	6.24	.002
B - Sex	1	4383.17	130.99	.001
C - Behavior	1	718.97	21.49	.001
A X B	2	39.02	1.17	
A X C	2	120.74	3.61	.03
B X C	1	138.56	4.14	.04
A X B X C	2	14.54	.44	
Within Cell	826	33.46		
Regression	1	23781.13	710.70	.001

Table 2.10

Means and Standard Deviations and Analysis of Covariance for STEP Reading Scores of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Males	98	50.09	47.82	11.15
Agg. Disrp. Grade 3 Males	56	38.23	43.54	13.59
Soc. App. Grade 3 Females	97	52.31	50.34	11.76
Agg. Disrp. Grade 3 Females	35	41.60	46.37	12.48
Soc. App. Grade 6 Males	107	50.98	49.73	10.47
Agg. Disrp. Grade 6 Males	57	41.39	45.57	11.63
Soc. App. Grade 6 Females	115	54.24	52.52	7.94
Agg. Disrp. Grade 6 Females	47	44.43	47.52	12.81
Soc. App. Grade 9 Males	77	54.91	51.65	6.82
Agg. Disrp. Grade 9 Males	36	39.31	43.62	11.58
Soc. App. Grade 9 Females	83	53.34	51.29	8.95
Agg. Disrp. Grade 9 Females	31	42.90	48.16	9.72
Soc. Approved	577	52.57	50.54	9.70
Agg. Disrp.	262	41.18	45.63	12.08
Males	431	47.58	47.77	10.74
Females	408	50.52	50.32	10.24
Grade 3	286	47.48	47.65	11.96
Grade 6	326	49.51	49.67	10.22
Grade 9	227	50.22	49.77	8.83

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	397.45	6.05	.002
B - Sex	1	1283.60	19.54	.001
C - Behavior	1	3345.25	50.92	.001
A X B	2	41.28	.63	
A X C	2	32.82	.50	
B X C	1	51.19	.78	
A X B X C	2	123.51	1.88	
Within Cell	826	65.70		
Regression	1	38067.43	579.43	.001

Table 2.11

Means and Standard Deviations and Analysis of Covariance for STEP Writing Scores of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Males	98	36.20	34.39	9.44
Agg. Disrp. Grade 3 Males	56	26.29	30.51	9.50
Soc. App. Grade 3 Females	97	41.54	39.97	7.69
Agg. Disrp. Grade 3 Females	35	32.23	36.03	10.29
Soc. App. Grade 6 Males	107	36.00	34.83	8.36
Agg. Disrp. Grade 6 Males	57	28.02	31.35	8.52
Soc. App. Grade 6 Females	115	41.63	40.26	7.27
Agg. Disrp. Grade 6 Females	47	33.57	36.04	9.17
Soc. App. Grade 9 Males	77	40.01	37.42	6.56
Agg. Disrp. Grade 9 Males	36	26.50	29.93	9.47
Soc. App. Grade 9 Females	83	42.25	40.62	7.42
Agg. Disrp. Grade 9 Females	31	31.84	36.03	8.28
Soc. Approved	577	39.52	37.91	7.86
Agg. Disrp.	262	29.45	32.99	9.12
Males	431	33.65	33.80	8.56
Females	408	39.26	39.09	7.95
Grade 3	286	35.58	35.72	8.96
Grade 6	326	36.24	36.37	8.11
Grade 9	227	37.57	37.21	7.53

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	140.37	3.50	.03
B - Sex	1	5783.14	144.2[illegible]	.001
C - Behavior	1	3041.63	75.86	.001
A X B	2	30.26	.76	
A X C	2	82.92	2.07	
B X C	1	12.14	.30	
A X B X C	2	46.17	1.15	
Within Cell	826	40.10		
Regression	1	24112.12	601.33	.001

Table 2.12

Means and Standard Deviations and Analysis of Covariance for STEP Social Studies Scores of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior Total Sample

	N	MEAN	ADJ. MEAN	SD
Soc. App. Grade 3 Males	98	47.62	45.59	11.33
Agg. Disrp. Grade 3 Males	56	37.39	42.12	14.05
Soc. App. Grade 3 Females	97	46.37	44.61	11.14
Agg. Disrp. Grade 3 Females	35	37.29	41.55	11.89
Soc. App. Grade 6 Males	107	42.16	41.04	9.44
Agg. Disrp. Grade 6 Males	57	33.51	37.24	9.52
Soc. App. Grade 6 Females	115	40.71	39.18	8.52
Agg. Disrp. Grade 6 Females	47	31.98	37.74	12.56
Soc. App. Grade 9 Males	77	45.17	42.26	8.41
Agg. Disrp. Grade 9 Males	36	32.50	36.35	8.78
Soc. App. Grade 9 Females	83	42.28	40.45	9.06
Agg. Disrp. Grade 9 Females	31	32.07	36.76	7.51
Soc. Approved	577	43.92	42.12	9.70
Agg. Disrp.	262	34.26	38.23	11.14
Males	431	41.37	41.54	10.33
Females	408	40.42	40.24	10.00
Grade 3	286	43.93	44.08	11.85
Grade 6	326	38.67	38.81	9.62
Grade 9	227	40.31	39.91	8.54

Analysis of Covariance

Source	df	MS	F	p
A - Grade	2	2272.55	33.45	.001
B - Sex	1	274.66	4.04	.05
C - Behavior	1	2421.89	35.65	.001
A X B	2	27.42	.40	
A X C	2	32.43	.48	
B X C	1	9.69	.14	
A X B X C	2	29.29	.43	
Within Cell	826	67.94		
Regression	1	30442.92	448.07	.001

Table 2.13

Regression Analysis Predicting SCAT Scores

Using Phase I Predictors

Intensives

	Criteria		
	Verbal	Quantitative	Total
R	.74†	.49†	.70†
SEE	7.02	7.22	11.90
N	59	59	59
$N_{x\text{-}val}$	68	68	68
$r_{x\text{-}val}$	.74†	.56†	.72†
Predictors	Simple Correlations of Predictors and Criteria[1]		
1	.25*	-.11	.09
3	-.43*	-.28	-.42
8	-.18*	-.28	-.26*
18	.61*	.34	.56*
20	.45	.41*	.50*
25	.20	.34*	.31
31	.22	.26	.28*

1. For simple correlations of each predictor with criterion, $r \geq .25$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.14

Regression Analysis Predicting SCAT Scores

Using Phase I Predictors

Nominees

	Criteria		
	Verbal	Quantitative	Total
R	.80†	.77†	.84†
SEE	6.66	6.07	9.83
N	312	312	312
$N_{x\text{-val}}$	359	359	359
$r_{x\text{-val}}$	.79†	.76†	.83†
Predictors	Simple Correlations of Predictors and Criteria[1]		
1	.29*	-.08	.13*
2	.04	-.15*	-.05
3	-.38*	-.40*	-.43*
20	.72*	.74*	.81*

1. For simple correlations of each predictor with criterion, $r \geq .11$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.15

Regression Analysis Predicting SCAT Scores

Using Phase I Predictors

Total Sample[1]

	Criteria		
	Verbal	Quantitative	Total
R	.77†	.74†	.81†
SEE	7.05	6.35	10.77
N	396	396	396
$N_{x\text{-val}}$	445	445	445
$r_{x\text{-val}}$	.78†	.73†	.81†
Predictors	Simple Correlations of Predictors and Criteria[2]		
1	-.28*	-.08	.12*
2	.02	-.16*	-.06
3	-.39*	-.41*	-.44*
20	.68*	.71*	.77*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 5, 6, 7, and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .11$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.16

Regression Analysis Predicting SCAT Scores

Using Phase I and III Predictors

Intensives

	Criteria		
	Verbal	Quantitative	Total
R	.83†	.70†	.84†
SEE	6.07	5.83	9.29
N	50	50	50
$N_{x\text{-val}}$	60	60	60
$r_{x\text{-val}}$	.78†	.67†	.72†
Predictors	Simple Correlations of Predictors and Criteria[1]		
1	.23*	-.11	.07
18	.68*	.36	.62
19	.62	.49	.64*
22	-.04*	.01*	-.02*
24	.65*	.65*	.74*
30	.25	.16	.23*

1. For simple correlations of each predictor with criterion, $r \geq .27$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.17

Regression Analysis Predicting SCAT Scores

Using Phase I and III Predictors

Nominees

	Criteria		
	Verbal	Quantitative	Total
R	.81†	.82†	.87†
SEE	6.07	5.11	8.51
N	216	216	216
$N_{x\text{-}val}$	260	260	260
$r_{x\text{-}val}$	.78†	.81†	.87†
Predictors	Simple Correlations of Predictors and Criteria[1]		
1	.30	-.15	.10*
2	.07	-.17*	-.04*
5	.68*	.76*	.81*
7	-.35*	-.33	-.38*
20	.25*	-.20*	.04
24	.64*	.65*	.72*

1. For simple correlations of each predictor with criterion, $r \geq .13$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.18

Regression Analysis Predicting SCAT Scores

Using Phase I and III Predictors

Total Sample[1]

	Criteria		
	Verbal	Quantitative	Total
R	.78†	.81†	.85†
SEE	6.38	5.28	8.93
N	270	270	270
$N_{x\text{-}val}$	320	320	320
$r_{x\text{-}val}$	.78†	.78†	.84†
Predictors	Simple Correlations of Predictors and Criteria[2]		
2	.10	-.15*	-.02*
5	.25*	-.20*	.05*
20	.65*	.73*	.78*
24	.63*	.65*	.72*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 5, 6, 7, 20, 21, 22, 23, and 24 and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .12$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.19

Regression Analysis Predicting STEP Scores

Using Phase I Predictors

Intensives

	Criteria				
	Reading	Writing	Social Studies	Science	Math
R	.72†	.61†	.47†	.48†	.69†
SEE	7.26	6.70	8.98	7.32	6.55
N	59	59	59	59	59
$N_{x\text{-val}}$	68	68	68	68	68
$r_{x\text{-val}}$	.70†	.55†	.54†	.32†	.42†
Predictors	Simple Correlations of Predictors and Criteria[1]				
2	.18	.31	-.10	-.34*	-.41*
3	-.37	-.35	-.28	-.29	-.43*
4	.01*	-.01	.01	-.06	-.17
12	-.22*	.01	-.23	-.25	-.33
18	.54*	.57*	.34*	.15	.31
19	.39	.56	.30	.22*	.36*
20	.59*	.48	.33	.19	.29
27	.08	-.07	.24*	.20	.16
29	.22	.24*	.29	.10	.08

1. For simple correlations of each predictor with criterion, $r \geq .25$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.20

Regression Analysis Predicting STEP Scores

Using Phase I Predictors

Nominees

	Criteria				
	Reading	Writing	Social Studies	Science	Math
R	.73†	.78†	.70†	.71†	.75†
SEE	8.62	5.92	7.52	5.78	6.17
N	342	342	342	342	342
$N_{x\text{-val}}$	381	381	381	381	381
$r_{x\text{-val}}$	.78†	.79†	.60†	.60†	.73†
Predictors	Simple Correlations of Predictors and Criteria[1]				
1	.08*	.07*	.04*	.03*	.06
2	.09	.23*	-.04	-.29*	-.26*
3	-.42*	-.47*	-.37*	-.29*	-.31*
5	.01	.02	.01	.01	.05*
7	-.39*	-.43	-.29	-.21	-.23
20	.68*	.71*	.68*	.64*	.69*

1. For simple correlations of each predictor with criterion, $r \geq .11$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.21

Regression Analysis Predicting STEP Scores

Using Phase I Predictors

Total Sample[1]

	Criteria				
	Reading	Writing	Social Studies	Science	Math
R	.71†	.76†	.66†	.66†	.73†
SEE	8.61	6.11	7.74	6.16	6.35
N	427	427	427	427	427
$N_{x\text{-val}}$	468	468	468	468	468
$r_{x\text{-val}}$	.76†	.77†	.63†	.60†	.70†
Predictors	Simple Correlations of Predictors and Criteria[2]				
1	.09*	.04*	.02	.01	.06
2	.08	.23*	-.07	-.29*	-.29*
3	-.42*	-.47*	-.37*	-.31*	-.36*
4	.07	.04	.08*	.05	.09
5	.03	.00	-.01	-.00	.05*
20	.68*	.69*	.65*	.58*	.65*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 5, 6, 7, and 20 and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .10$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.22

Regression Analysis Predicting STEP Scores

Using Phase I and III Predictors

Intensives

	Criteria				
	Reading	Writing	Social Studies	Science	Math
R	.83†	.65†	.69†	.52†	.81†
SEE	6.10	6.61	7.14	7.27	5.51
N	55	55	55	55	55
$N_{x\text{-val}}$	64	64	64	64	64
$r_{x\text{-val}}$	.78†	.65†	.55†	.36†	.59†
Predictors	Simple Correlations of Predictors and Criteria[1]				
2	.18	.32	-.11	-.34*	-.40*
4	.03*	.03	.02	-.01	-.18
12	-.23*	.01	-.24	-.27	-.34
18	.59*	.55	.40	.15	.34
19	.47	.55*	.39	.26*	.45*
20	.63*	.48	.35	.16	.33
21	-.12	-.21	.08*	.20	-.03
23	.45	.49*	.44*	.31	.50
24	.69*	.54	.57*	.29	.59*
28	.19	.27*	.18	.21	.15

1. For simple correlations of each predictor with criterion, $r \geq .27$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.23

Regression Analysis Predicting STEP Scores

Using Phase I and III Predictors

Nominees

	Criteria				
	Reading	Writing	Social Studies	Science	Math
R	.74†	.82†	.74†	.73†	.77†
SEE	8.63	5.14	7.11	5.31	5.89
N	243	243	243	243	243
$N_{x\text{-val}}$	275	275	275	275	275
$r_{x\text{-val}}$	.81†	.82†	.66†	.64†	.78†
Predictors	Simple Correlations of Predictors and Criteria[1]				
1	.11*	.07	.03	.01	-.01
2	.10	.26*	-.04*	-.28*	-.28*
5	.66*	.68*	.66*	.64*	.69*
7	-.42*	-.48*	-.31	-.22	-.22
23	.50	.64*	.52	.33	.38
24	.63*	.72*	.67*	.55*	.58*

1. For simple correlations of each predictor with criterion, $r \geq .12$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.24

Regression Analysis Predicting STEP Scores

Using Phase I and III Predictors

Total Sample[1]

	Criteria				
	Reading	Writing	Social Studies	Science	Math
R	.74†	.79†	.73†	.68†	.76†
SEE	8.37	5.40	7.11	5.77	5.94
N	302	302	302	302	302
$N_{x\text{-val}}$	340	340	340	340	340
$r_{x\text{-val}}$	.80†	.82†	.67†	.63†	.75†
Predictors	Simple Correlations of Predictors and Criteria[2]				
1	.11*	.05	-.01	-.02	-.01
2	.10	.26*	-.06*	-.29*	-.30*
7	-.37*	-.41*	-.29	-.23	-.27
20	.66*	.66*	.61*	.56*	.64*
21	-.25	-.29	-.10*	-.05*	-.17
23	.50	.62*	.50*	.33	.41
24	.64*	.70*	.66*	.50*	.59*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 5, 6, 7, 20, 21, 22, 23, and 24 and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .11$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.25

Regression Analysis Predicting High School Rank

Using Phase I Predictors

Intensives

	Criteria
R	.77†
SEE	19.42
N	119
$N_{x\text{-}val}$	113
$r_{x\text{-}val}$	.63†

Predictors	Simple Correlations of Predictors and Criteria[1]
2	.17*
3	-.55*
8	-.34*
18	.54*
20	.54*
27	.24*
31	.10*

1. For simple correlations of each predictor with criterion, $r \geq .19$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.26

Regression Analysis Predicting Rank in High School Graduating Class Using Phase I Predictors

Nominees

	Criteria
R	.70†
SEE	21.20
N	398
$N_{x\text{-}val}$	411
$r_{x\text{-}val}$	.72†

Predictors	Simple Correlations of Predictors and Criteria[1]
1	.07*
2	.14*
3	-.46*
20	.61*

1. For simple correlations of each predictor with criterion, $r \geq .10$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.27

Regression Analysis Predicting Rank in High School Graduating Class Using Phase I Predictors

Total Sample[1]

	Criteria
R	.70†
SEE	21.40
N	549
$N_{x\text{-}val}$	555
$r_{x\text{-}val}$	.69†

Predictors	Simple Correlations of Predictors and Criteria[2]
2	.14*
3	-.50*
4	.08*
20	.60*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 2, 3, 4, 5, 6, 7, and 20 and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .08$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.28

Regression Analysis Predicting Rank in High School Graduating Class Using Phase I and III Predictors

Intensives

	Criteria
R	.91†
SEE	12.01
N	88
$N_{x\text{-}val}$	95
$r_{x\text{-}val}$	.81†

Predictors	Simple Correlations of Predictors and Criteria[1]
6	-.45*
8	-.34*
12	.09*
18	.54*
23	.75*
24	.84*

1. For simple correlations of each predictor with criterion, $r \geq .21$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.29

Regression Analysis Predicting Rank in High School Graduating Class Using Phase I and III Predictors

Nominees

	Criteria
R	.88†
SEE	13.41
N	272
$N_{x\text{-val}}$	293
$r_{x\text{-val}}$	.88†

Predictors	Simple Correlations of Predictors and Criteria[1]
5	.09*
20	.58*
23	.70*
24	.87*

1. For simple correlations of each predictor with criterion, $r \geq .12$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 2.30

Regression Analysis Predicting Rank in High School Graduating Class Using Phase I and III Predictors

Total Sample[1]

	Criteria
R	.88†
SEE	13.49
N	365
$N_{x\text{-val}}$	388
$r_{x\text{-val}}$	.87†

Predictors	Simple Correlations of Predictors and Criteria[2]
5	.01*
20	.57*
23	.71*
24	.86*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 5, 6, 7, 20, 21, 22, 23, and 24 and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .10$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.1

Means and Standard Deviations and Analysis of Variance for Low Aggressive Behavior Traits of Children 8 Years After They Were First Identified in Grade 3 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	MEAN	SD		N	MEAN	SD
Soc. App. Rural Males	.31	.76	Soc. App.	325	.20	.57
Agg. Disrp. Rural Males	.49	.94	Agg. Disrp.	164	.64	1.16
Soc. App. Rural Females	.16	.45	Males	253	.45	.95
Agg. Disrp. Rural Females	.53	.94	Females	236	.24	.64
Soc. App. Urban Males	.23	.68	Rural	244	.31	.72
Agg. Disrp. Urban Males	.94	1.45	Urban	245	.39	.90
Soc. App. Urban Females	.12	.33				
Agg. Disrp. Urban Females	.46	1.12				

Analysis of Variance

Source	df	MS	F	p
A - Sex	1	5.34	7.89	.01
B - Behavior	1	18.88	27.92	.001
C - Location	1	.19	.28	
A X B	1	.41	.61	
A X C	1	.95	1.41	
B X C	1	2.13	3.15	
A X B X C	1	2.10	3.10	
Within Cell	481	.68		

Table 3.2

Means and Standard Deviations and Analysis of Variance for High Aggressive Behavior Traits of Children 8 Years After They Were First Identified in Grade 3 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	MEAN	SD		N	MEAN	SD
Soc. App. Rural Males	.17	.50	Soc. App.	325	.11	.44
Agg. Disrp. Rural Males	.37	1.05	Agg. Disrp.	164	.41	.87
Soc. App. Rural Females	.09	.46	Males	253	.28	.73
Agg. Disrp. Rural Females	.27	.52	Females	236	.14	.46
Soc. App. Urban Males	.19	.54	Rural	244	.19	.62
Agg. Disrp. Urban Males	.50	.95	Urban	245	.24	.62
Soc. App. Urban Females	.01	.12				
Agg. Disrp. Urban Females	.46	.77				

Analysis of Variance

Source	df	MS	F	p
A - Sex	1	2.28	5.96	.02
B - Behavior	1	8.99	23.52	.001
C - Location	1	.15	.39	
A X B	1	.08	.21	
A X C	1	.12	.31	
B X C	1	.82	2.14	
A X B X C	1	.18	.46	
Within Cell	481	.38		

Table 3.3

Means and Standard Deviations and Analysis of Variance for Total Behavior Traits of Children 8 Years After They Were First Identified in Grade 3 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	MEAN	SD		N	MEAN	SD
Soc. App. Rural Males	.47	1.09	Soc. App.	325	.32	.85
Agg. Disrp. Rural Males	.86	1.78	Agg. Disrp.	164	1.05	1.78
Soc. App. Rural Females	.25	.73	Males	253	.73	1.48
Agg. Disrp. Rural Females	.80	1.22	Females	236	.39	.93
Soc. App. Urban Males	.42	1.05	Rural	244	.50	1.14
Agg. Disrp. Urban Males	1.44	2.14	Urban	245	.63	1.34
Soc. App. Urban Females	.13	.38				
Agg. Disrp. Urban Females	.92	1.67				

Analysis of Variance

Source	df	MS	F	p
A - Sex	1	14.59	9.27	.001
B - Behavior	1	53.92	34.28	.001
C - Location	1	.67	.43	
A X B	1	.13	.08	
A X C	1	1.74	1.11	
B X C	1	5.58	3.55	
A X B X C	1	1.06	.67	
Within Cell	481	1.57		

Table 3.4

Means and Standard Deviations and Analysis of Variance for Social Adjustment of Children 8 Years After They Were First Identified in Grades 3, 6, or 9 as Displaying Socially Approved or Aggressive Disruptive Behavior
Total Sample

	MEAN	SD		N	MEAN	SD
Soc. App. Grade 3 Males	40.47	7.97	Soc. App.	650	43.61	6.87
Agg. Disrp. Grade 3 Males	33.56	7.15	Agg. Disrp.	321	34.59	7.16
Soc. App. Grade 3 Females	42.68	6.00	Males	486	38.98	7.50
Agg. Disrp. Grade 3 Females	36.94	5.95	Females	485	42.28	6.39
Soc. App. Grade 6 Males	42.64	6.99	Grade 3	372	39.47	6.87
Agg. Disrp. Grade 6 Males	31.21	7.53	Grade 6	323	40.10	6.98
Soc. App. Grade 6 Females	43.89	6.40	Grade 9	276	42.80	7.10
Agg. Disrp. Grade 6 Females	37.73	7.69	Soc. App. Grade 3	252	41.63	6.98
Soc. App. Grade 9 Males	45.34	7.60	Agg. Disrp. Grade 3	120	34.94	6.65
Agg. Disrp. Grade 9 Males	33.86	8.10	Soc. App. Grade 6	212	43.28	6.68
Soc. App. Grade 9 Females	47.77	6.46	Agg. Disrp. Grade 6	111	34.03	7.56
Agg. Disrp. Grade 9 Females	35.72	6.67	Soc. App. Grade 9	186	46.66	6.98
			Agg. Disrp. Grade 9	90	34.81	7.36
			Soc. App. Males	308	42.55	7.52
			Agg. Disrp. Males	178	32.80	7.48
			Soc. App. Females	342	44.56	6.25
			Agg. Disrp. Females	143	36.81	6.76

Table 3.4 (cont.)

Analysis of Variance

Source	df	MS	F	p
A - Grade	2	942.55	19.20	.001
B - Sex	1	2467.55	50.27	.001
C - Behavior	1	16574.80	337.66	.001
A X B	2	14.38	.29	
A X C	2	505.15	10.29	.001
B X C	1	226.76	4.62	.03
A X B X C	2	153.49	3.13	.04
Within Cell	959	49.09		

Table 3.5

Regression Analysis of Behavior Traits for Third Grade

Using Phase I Predictors

Intensives

	Criteria		
	Total Behavior Traits	High Aggressive Traits	Low Aggressive Traits
R	.33†	.46†	.31†
SEE	1.43	.55	1.02
N	47	47	47
$N_{x\text{-val}}$	61	61	61
$r_{x\text{-val}}$	.15†	.24†	.05†
Predictors	Simple Correlations of Predictors and Criteria[1]		
3	.34*	.28	.31*
6	.22	.31*	.13
30	.18	.32*	.06

1. For simple correlations of each predictor with a criterion, $r \geq .28$ is significantly different from 0 at .05 level.

† Significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.6

Regression Analysis of Behavior Traits for Third Grade

Using Phase I Predictors

Nominees

	Criteria		
	Total Behavior Traits	High Aggressive Traits	Low Aggressive Traits
R	.48†	.42†	.45†
SEE	1.39	.69	.95
N	153	153	153
$N_{x\text{-val}}$	150	150	150
$r_{x\text{-val}}$	.19†	.03†	.23†
Predictors	Simple Correlations of Predictors and Criteria[1]		
5	.32*	.38*	.20
6	.38*	.26*	.38*
20	-.34*	-.22	-.35*

1. For simple correlations of each predictor with criterion, $r \geq .16$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.7

Regression Analysis of Behavior Traits for Third Grade

Using Phase I Predictors

Total Sample[1]

	Criteria		
	Total Behavior Traits	High Aggressive Traits	Low Aggressive Traits
R	.44†	.39†	.40†
SEE	1.40	.67	.97
N	201	201	201
$N_{x\text{-val}}$	213	213	213
$r_{x\text{-val}}$	.19†	.05	.22†
Predictors	Simple Correlations of Predictors and Criteria[2]		
2	-.20*	-.17	-.17*
3	.32	.21	.33*
5	.24*	.31*	.14
6	.32*	.26*	.30
20	-.30*	-.20	-.31*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 2, 3, 4, 5, 6, 7, and 20 and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .14$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.8

Regression Analysis of Behavior Traits for Third Grade

Using Phase I and III Predictors

Intensives

	Criteria		
	Total Behavior Traits	High Aggressive Traits	Low Aggressive Traits
R	.72†	.81†	.54†
SEE	1.11	.37	.94
N	42	42	42
$N_{x\text{-val}}$	56	56	56
$r_{x\text{-val}}$	.22	.13	.24
Predictors	Simple Correlations of Predictors and Criteria[1]		
21	.72*	.81*	.54*

1. For simple correlations of each predictor with criterion, r _ .30 is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.9

Regression Analysis of Behavior Traits for Third Grade

Using Phase I and III Predictors

Nominees

	Criteria		
	Total Behavior Traits	High Aggressive Traits	Low Aggressive Traits
R	.59†	.51†	.55†
SEE	1.27	.63	.90
N	146	146	146
$N_{x\text{-val}}$	145	145	145
$r_{x\text{-val}}$	.24†	.05	.27†
Predictors	Simple Correlations of Predictors and Criteria[1]		
5	.32*	.39*	.21
6	.38*	.25	.38*
21	.50*	.45*	.42*
23	-.43*	-.25	-.47*

1. For simple correlations of each predictor with criterion, $r \geq .16$ is significantly different from 0 at .05 level.

† Significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.10

Regression Analysis of Behavior Traits for Third Grade

Using Phase I and III Predictors

Total Sample[1]

	Criteria		
	Total Behavior Traits	High Aggressive Traits	Low Aggressive Traits
R	.58†	.54†	.54†
SEE	1.27	.60	.91
N	189	189	189
$N_{x\text{-val}}$	201	201	201
$r_{x\text{-val}}$	.29†	.15†	.27†
Predictors	Simple Correlations of Predictors and Criteria[2]		
3	.34*	.21	.36*
5	.24	.30*	.14
7	.30	.24*	.28
21	.53*	.50*	.44*
23	-.44*	-.29	-.45*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 5, 6, 7, 20, 21, 22, 23, and 24 and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .13$ is significantly different from 0 at .05 level.

† Significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.11

Regression Analysis Predicting Social Adjustment

Using Phase I Predictors

Intensives

	Criteria
	Social Adjustment
R	.65†
SEE	5.19
N	77
$N_{x\text{-}val}$	66
$r_{x\text{-}val}$	.60†

Predictors	Simple Correlations of Predictors and Criteria[1]
7	-.39*
8	-.33*
18	.45*
27	.24*

1. For simple correlations of each predictor with criterion, $r \geq .22$ is significantly different from 0 at .05 level.

† Significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.12

Regression Analysis Predicting Social Adjustment

Using Phase I Predictors

Nominees

	Criteria
	Social Adjustment
R	.66†
SEE	6.31
N	368
$N_{x\text{-}val}$	370
$r_{x\text{-}val}$	.64†

Predictors	Simple Correlations of Predictors and Criteria[1]
2	.12*
3	-.46*
5	.14*
20	.54*

1. For simple correlations of each predictor with criterion, $r \geq .10$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.13

Regression Analysis Predicting Social Adjustment

Using Phase I Predictors

Total Sample[1]

	Criteria
	Social Adjustment
R	.64†
SEE	6.45
N	471
$N_{x\text{-}val}$	458
$r_{x\text{-}val}$	.65†

Predictors	Simple Correlations of Predictors and Criteria[2]
1	.10*
2	.11*
3	-.48*
4	.12*
20	.52*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 5, 6, 7, and 20 and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .09$ is significantly different from 0 at .05 level.

† Significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.14

Regression Analysis Predicting Social Adjustment

Using Phase I and III Predictors

Intensives

	Criteria
	Social Adjustment
R	.72†
SEE	4.83
N	67
$N_{x\text{-}val}$	59
$r_{x\text{-}val}$	.67†

Predictors	Simple Correlations of Predictors and Criteria[1]
8	-.37*
23	.59*
24	.61*

1. For simple correlations of each predictor with criterion, $r \geq .24$ is significantly different from 0 at .05 level.

† R is significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.15

Regression Analysis Predicting Social Adjustment

Using Phase I and III Predictors

Nominees

	Criteria
	Social Adjustment
R	.84†
SEE	4.47
N	258
$N_{x\text{-val}}$	250
$r_{x\text{-val}}$	.74†

Predictors	Simple Correlations of Predictors and Criteria[1]
23	.76*
24	.80*

1. For simple correlations of each predictor with criterion, $r \geq .12$ is significantly different from 0 at .05 level.

† Significant at the .05 level.

* Predictors which were included in optimum sets.

Table 3.16

Regression Analysis Predicting Social Adjustment

Using Phase I and III Predictors

Total Sample[1]

	Criteria
	Social Adjustment
R	.81†
SEE	4.66
N	330
$N_{x\text{-}val}$	310
$r_{x\text{-}val}$	.74†

Predictors	Simple Correlations of Predictors and Criteria[2]
23	.73*
24	.77*

1. Total sample includes more subjects than were used in separate analyses of nominees and intensives because the predictor set was limited to variable numbers 1, 2, 3, 4, 5, 6, 7, 20, 21, 22, 23, and 24 and this resulted in less attrition of samples.

2. For simple correlations of each predictor with criterion, $r \geq .11$ is significantly different from 0 at .05 level.

† Significant at the .05 level.

* Predictors which were included in optimum sets.

Table 4.1

Number and Percentage of Subjects Known to the

Eau Claire County Guidance Clinic

Group	Soc. App. Boys	Agg. Disrp. Boys	Soc. App. Girls	Agg. Disrp. Girls	All Males	All Females	All Soc. App.	All Agg. Disrp.	All Urban	All Rural	Total
Third Grade Subjects Known	2	16	3	5	18	8	5	21	12	14	26
% Known	1%	14%	2%	6%	6%	3%	1%	11%	4%	5%	5%
Sixth Grade Subjects Known	6	8	2	6	14	8	8	14	10	12	22
% Known	3%	7%	1%	7%	5%	3%	2%	7%	4%	4%	4%
Ninth Grade Subjects Known	4	14	5	5	18	10	9	19	23	5	28
% Known	3%	16%	4%	6%	8%	5%	3%	11%	7%	4%	6%
Total Sample Subjects Known	12	38	10	16	50	26	22	54	45	31	76
% Known	3%	12%	2%	6%	6%	3%	2%	10%	5%	5%	5%

Table 4.2

Number and Percentage of Subjects Known to the

Eau Claire County Department of Public Welfare

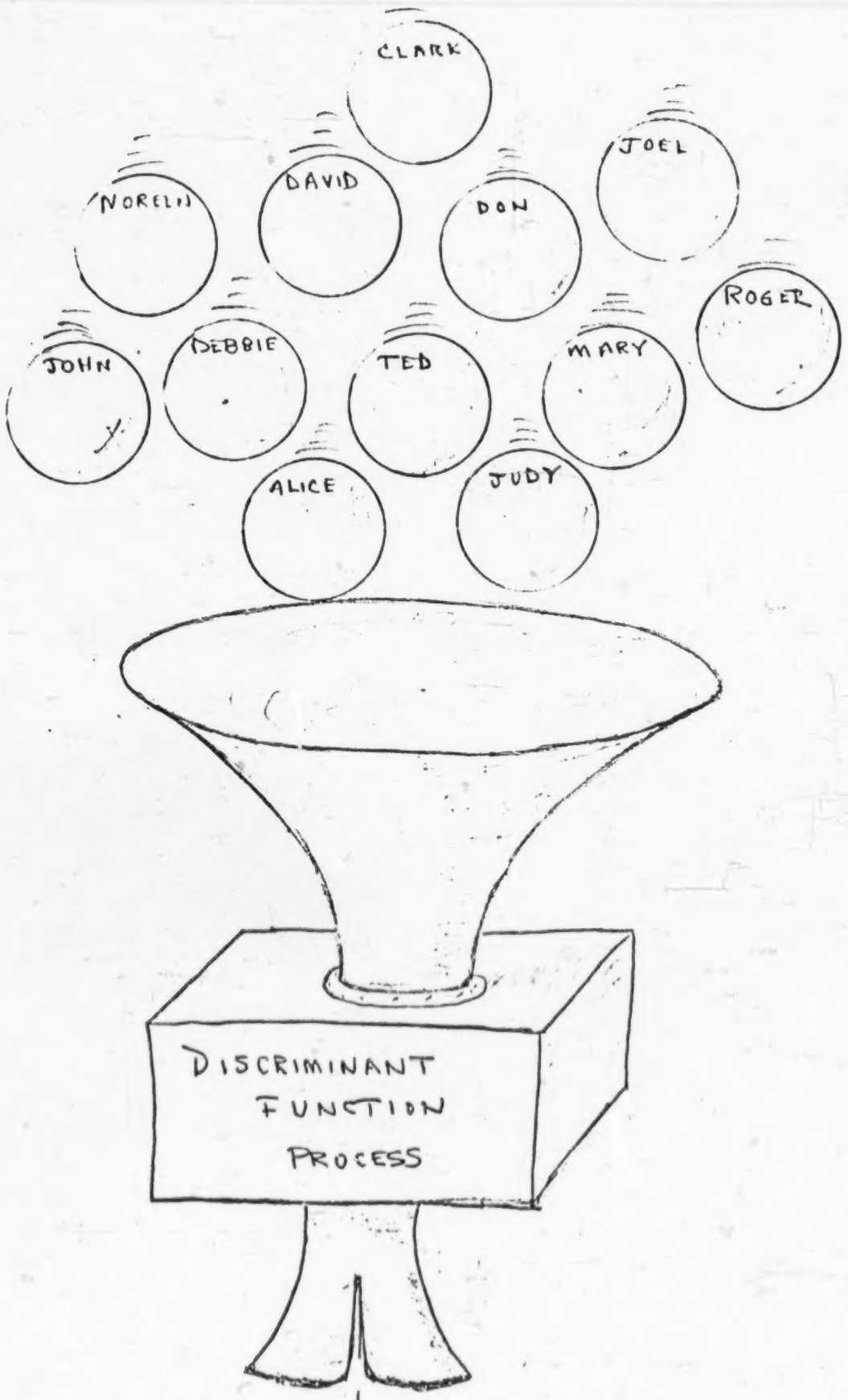
Group	Soc. App. Boys	Agg. Disrp. Boys	Soc. App. Girls	Agg. Disrp. Girls	All Males	All Females	All Soc. App.	All Agg. Disrp.	All Urban	All Rural	Total
Third Grade Subjects Known	31	55	28	32	86	60	59	87	67	79	146
% Known	18%	48%	15%	40%	30%	23%	17%	45%	25%	29%	27%
Sixth Grade Subjects Known	32	66	37	33	98	70	69	99	88	80	168
% Known	18%	58%	20%	37%	34%	25%	19%	49%	32%	28%	30%
Ninth Grade Subjects Known	25	42	32	35	67	67	57	77	103	31	134
% Known	19%	48%	23%	43%	30%	31%	21%	46%	32%	26%	30%
Total Sample Subjects Known	88	163	97	100	251	197	185	263	258	190	448
% Known	18%	52%	19%	40%	32%	26%	19%	46%	30%	28%	30%

Table 4.3

Number and Percentage of Subjects Known to the

Eau Claire City-County Health Department

Group	Soc. App. Boys	Agg. Disrp. Boys	Soc. App. Girls	Agg. Disrp. Girls	All Males	All Females	All Soc. App.	All Agg. Disrp.	All Urban	All Rural	Total
Third Grade Subjects Known	50	55	61	34	105	95	111	89	89	111	200
% Known	30%	48%	34%	43%	37%	36%	35%	46%	33%	41%	37%
Sixth Grade Subjects Known	45	45	44	42	90	86	89	87	77	99	176
% Known	26%	40%	24%	47%	31%	31%	25%	43%	28%	34%	31%
Ninth Grade Subjects Known	23	30	18	13	53	31	41	43	74	10	84
% Known	17%	34%	13%	16%	24%	14%	15%	26%	23%	8%	19%
Total Sample Subjects Known	118	130	123	89	248	212	241	219	240	220	460
% Known	25%	41%	24%	35%	31%	28%	25%	39%	28%	32%	30%


CLARK
JOEL
NORELN
DAVID
DON
ROGER
JOHN
DEBBIE
TED
MARY
ALICE
JUDY
DISCRIMINANT
FUNCTION
PROCESS
GROUP I
GROUP II
20%
JUDY
30%
DON
46%
DEBBIE
55%
DAVID
63%
CLARK
70%
ALICE
80%
NOREEN
25%
JOHN
35%
MARY
52%
ROGER
60%
TED
65%
JOEL

Part I

Manual for Prediction of Law Contacts, Court Appearances, and Health Department Contacts

This manual was designed to implement the prediction systems growing out of the discriminant analyses carried out in the Eau Claire County Youth Study. Beyond this, the procedures described herein may also serve as a model for others who wish to develop prediction systems using the psychosocial data available to them and directed especially to the behavior of children and youth in their own locales. The user of this manual will be able to predict in terms of probability to which group specific individuals will belong. Six prediction systems have been developed in this research which classify individuals according to the following three dichotomous criteria: law contact or no law contact; court appearances or no court appearances; and health department contact or no health department contact. In this study the time from data collection to assessment of these criteria measures ranged from 4 to 8 years. Use of these systems will allow for classification of people in terms of these categories with an accuracy significantly better than that obtainable by chance alone.

A statement is in order at this point to caution the user against some obvious but often overlooked pitfalls associated with any predictive device. The primary pitfall is that any prediction system is devised from data for a particular group at a particular point in time. And while it is hoped that the prediction system will have general applicability, this implies that certain group characteristics are derived from the community in which the study was made. As Rosenberg and Silverstein (1969) point out, not all communities are the same, nor do they have the same effect on behavior patterns of the children in these communities. Thus, perhaps different prediction systems based on different predictors, or different degrees of the same predictors for the same or different criteria may be needed to meet circumstances which vary from community to community.

A second pitfall is the user's possibly naive and complete acceptance of the system without due attention to the predictive validity. This may lead him to forget his responsibility for decision making. This is evidenced in such statements as: "The system said it was so," or "The numbers came out such and such, and hence . . . ". It must be remembered that any device is just that, a device, a tool, to be used, guided and directed by the user much like a brush in the hand of an artist.

With the data collected during Phase I through Phase III of the Youth Study serving as predictor variables, and the data from Phase IV as that which was to be predicted, we have developed prediction systems for dichotomous group membership for the following criteria: law contact, court appearance, and health department contact. As summarized elsewhere in this technical

report, these systems have been validated and cross-validated with percentages of accuracy ranging from .62 to .91. The prediction systems were derived using discriminant function analysis.

A Stepwise Discriminant Function Analysis Program BMD07M was used to find the minimum set of variables that will differentiate (in terms of probability values) between individuals who will belong to one or another group on the basis of individual scores for these variables. From the set of predictor variables the stepwise version selects those variables that make a significant contribution to predictability, and, at the same time, indicates their relative importance. The program provides a set of coefficients that are to be used in conjunction with the set of predictor variables. The probability value that an individual will be a member of a particular group is obtained from the following relation:

$$p = \frac{e^{s_i}}{e^{s_i}}$$

where: e is the base of the natural logarithms,

s_i is the scalor product $C_{-i} X_{-i}$,

C_{-i} is the set of coefficients for a particular group classification,

X_{-i} is the set of scores from the optimum variables.

However, because of the complexity of the equation, the either/or nature of the criterion groups in the study, and the possible unfamiliarity of the user with regard to the mathematical manipulation involved, we have devised a less complicated procedure for obtaining the probability value for an individual. Basically, the prospective user does a series of multiplications and then adds the results. The resulting value, S, is then referenced to a table that relates S to the probability, p, or group membership. The required table (Table G) is provided at the end of this manual. Thus, there are two steps to perform:

a) Compute $S = C_{-i} X_{-i}$ from selected set of optimum variables

b) Reference S to p from Table G.

The user's selection of which set of optimum predictor variables and coefficients to use depends on: (1) What the user is trying to predict and (2) The data the user has available (either obtained or obtainable). The answers to these questions determine which coefficients and variables to use; and the possible options are shown in Tables A through F. The first question of the selection process involves the choice by the user from the following list:

1. Law Contact (Tables A and B)
2. Juvenile Court Appearance (Tables C and D)
3. Health Department Contact (Tables E and F)

The answer to the second question depends on the psycho-sociometric measures that the user has available.

Each table is organized according to the predictors available: (1) A set derived from the sample studied intensively and (2) A set derived from our total sample of intensives and nominees. Following each source label is a bracketed pair of numbers that refer to the validation predictive accuracy and cross-validation predictive accuracy respectively expressed in percentages.

However, it should also be noted that many of the variables are common to the two lists and the minimum sets of variables for the two systems are often nearly identical. Furthermore, the potential user of our systems must use the same tests, scoring procedures, and coding systems which we used and which are described fully elsewhere (Thurston, Feldhusen, and Benning, 1964, Phase I). Finally it should be pointed out that predictors are identified in Tables A to F as Phase I or Phase I and III. This means that certain variables such as the behavior traits score were first obtained (Phase I) when the children were in grades 3, 6, or 9 and then that the same instrument was administered about four of five years later (Phase III). These scores were the ones used in making the predictions of status eight or nine years beyond the first (Phase I) testing or four or five years beyond the second (Phase III) testing. The I or III in parenthesis after certain variables in Tables A to F refer to the time in our study when the variable was assessed.

The step-by-step example which follows may prove helpful in illustrating the procedure to be followed in determining the probability of an individual's future membership in a particular group.

Suppose that the user is interested in determining whether or not a girl named Debbie will become involved with health department agencies. Further, suppose that only limited psycho-sociometric data is available on Debbie. Specifically, the prospective user knows: sex (female = 2); behavior (socially approved = 1); high aggressive traits (2); and IQ (105). With these specifications, the user's attention focuses on Table E, section 2, since this is the section that contains the predictor variables that correspond to the available data on Debbie.

In Figure IA, a sample calculation format shows the predictor variables and their corresponding coefficients in the first two columns as taken from Table 3, section 2. In column three of the format, Debbie's scores for the predictor variables have been entered. The product column is the result of multiplying Debbie's scores by the corresponding coefficient. Note that the score for the "constant" is always one. The box "Total S" represents

the algebraic sum of the products just obtained. In order to determine the probability that Debbie will have contact with the health department, the value of "S" is referenced to "p", the probability, in Table G. Figure B is the portion of Table G of interest in this example. The arrow indicates the range into which Debbie's "S" value falls and the corresponding "p" value.

By relating Debbie's S to the probability of health department contact, we see that the probability that she will be a member of the group who will have contact is only .46. In terms of percentages, the chance that Debbie will have contact with health department agencies is 46%. Alternatively, the chance that Debbie will not have contact with the health department is 54%.

A word of caution is in order at this point regarding probabilities near .50 or 50%. Since the value of S is a product of several measures, its accuracy in part depends on the reliability of these measures and in part on the accuracy of the prediction system itself. Hence, because of the relationship of "S" to "p", the user must exercise due caution when probability for an individual is near the mid-range of p. That is, we have increasing confidence in the prediction as the probability departs from .50.

As a second example, a prospective user wants to know what the chances are that John will be involved in contact with law enforcement agencies. The user has at his disposal the following information on John: sex (male = 1); behavior (aggressive = 2); home location (urban = 2); age (12 years, 5 months = 149 months); IQ (108); low aggressive behavior traits (3); and average of teacher grades (1.75). Under these specifications, the user would select Table B section 2. In Figure C, the sample calculation format shows the predictor variables and their corresponding coefficients. In the "Individual's Scores" column, John's scores have been entered. The "product" column reflects the separate products formed and the Total S box gives John's S value. Note again that the score for the constant is one.. In order to determine the probability that John will be involved in contact with law enforcement agencies the S value is referenced to the probability p in Table G. Figure D is the portion of Table G of interest in this example. The arrow indicates the range into which John's S value falls and the corresponding p value.

The value of p from the table indicates that the probability that John will have contact with law enforcement agencies is .96, or in percentage terms 96%. Correspondingly, the probability that John will not have contact with law enforcement agencies is .04, or 4%. In this case the odds are very high that John will have contact with a law enforcement agency.

Practice Exercise:

You are interested in determining the probability that Clark will appear before the juvenile court. The following data are available to you: low aggressive behavior traits I (4); high aggressive behavior traits III (2); social adjustment (60).

FIGURE IE

PRACTICE FORMAT

PROBABILITY OF _____		NAME _____	
SET OF OPTIMUM VARIABLES	SET OF COEFFICIENTS	Individual's Scores	PRODUCT: $C_i X_i$

FIGURE IA

Sample Calculation Format
For Debbie

PROBABILITY OF HEALTH DEPARTMENT CONTACT		NAME Debbie	
SET OF OPTIMUM VARIABLES	SET OF COEFFICIENTS	Debbie's Scores On Each Variable	PRODUCT: $C_i X_i$
Constant	-3.65359	1	-3.65359
Sex	0.43792	2	0.87584
Behavior	-0.67619	1	-0.67619
High Aggr. Traits (I)	-0.19095	2	-0.38190
IQ	0.03803	105	3.99315
			TOTAL S = 0.15731

FIGURE IB

Portion of Table IG

S Range	p
.30228 to .26149	.43
.26148 to .22090	.44
.22089 to .18050	.45
.18049 to .14024	.46 ←
.14023 to .10009	.47
.10008 to .06003	.48
.06002 to .02001	.49
.02000 to -.01999	.50
-.02000 to -.06001	.51
-.06002 to -.10007	.52
-.10008 to -.14022	.53
-.14023 to -.18048	.54

FIGURE IC

Sample Calculation Format

PROBABILITY OF LAW CONTACT		NAME John	
SET OF OPTIMUM VARIABLES	SET OF COEFFICIENTS	Individual's Scores	PRODUCT: $C_i X_i$
Constant	6.28803	1	6.28803
Sex	1.31129	1	1.31129
Behavior	-0.84667	2	-1.69334
Home Location	-0.79437	2	-1.58874
Age (In Months)	-0.03329	149	-4.96021
IQ	-0.02230	108	-2.40840
Low Aggr. Traits (III)	-0.40401	3	-1.21203
Avg. Teacher Grades	0.56016	1.75	0.98028
			TOTAL S = -3.28312

FIGURE ID

Portion of Table IG

S Range	p
-2.51231 to -2.66615	.93
-2.66616 to -2.84384	.94
-2.84385 to -3.05504	.95
-3.05505 to -3.31677	.96 ←
-3.31678 to -3.66355	.97
-3.66356 to -4.18458	.98
-4.18459 to -5.29329	.99
-5.29330 to ---	

TABLE IA

	Law Contact Prediction			
	1 Intensives (79;73)		2 Total Sample (71;69)	
	Predictor	Coefficient Set	Predictor	Coefficient Set
Phase I Predictors	Constant	11.52624	Constant	0.56687
	Grade	1.31254	Sex	1.61474
	Sex	1.61259	Behavior	-0.56715
	Home Location	- 1.54704	Home Location	-0.94739
	Age (In Months)	- 0.14942	Age (In Months)	-0.01236
	High Aggr. Traits (I)	- 0.39476	Low Aggr. Traits (I)	-0.18111
	Low Aggr. Traits (I)	- 0.42483	IQ	0.01269
	KD Area 5	0.25757		
	Mother's Use of Time	- 1.30014		

TABLE IB

	Law Contact Prediction			
	1 Intensives (84;69)		2 Total Sample (73;74)	
	Predictor	Coefficient Set	Predictor	Coefficient Set
Phase I Predictors	Constant	5.59642	Constant	6.28803
	Sex	1.79197	Sex	1.31129
	Age (In Months)	-0.06777	Behavior	-0.84667
	High Aggr. Traits (I)	-0.48318	Home Location	-0.79437
	Low Aggr. Traits (III)	-0.78448	Age (In Months)	-0.03329
	Teacher Grd.'s Avg.	0.09827	IQ	-0.02230
			Low Aggr. Traits (III)	-0.40401
			Teacher Grades Avg.	0.56016

TABLE IC

	Juvenile Court Appearance Prediction			
	1 Intensives (76;69)		2 Total Sample (78;76)	
	Predictor	Coefficient Set	Predictor	Coefficient Set
Phase I Predictors	Constant	1.70269	Constant	-0.17268
	Low Aggr. Traits (I)	-0.89094	Sex	0.85953
			Low Aggr. Traits (I)	-0.83139

TABLE ID

	Juvenile Court Appearance Prediction			
	1 Intensives (91;77)		2 Total Sample (82;78)	
	Predictor	Coefficient Set	Predictor	Coefficient Set
Phase I & III Predictors	Constant	-1.09495	Constant	0.19791
	Low Aggr. Traits (I)	-0.73627	Low Aggr. Traits (I)	-0.49466
	High Aggr. Traits (III)	-2.41596	Low Aggr. Traits (III)	-1.38260
	Social Adjustment	0.08158	Teacher Grd.'s Avg.	0.71227

TABLE IE

	Health Department Contact Prediction			
	1 Intensives (77;62)		2 Total Sample (69;70)	
	Predictor	Coefficient Set	Predictor	Coefficient Set
Phase I Predictors	Constant	-7.02113	Constant	-3.65359
	Low Aggr. Traits (I)	-0.61790	Sex	0.43792
	KD Area 5	0.17978	Behavior	-0.67619
	Reading Ach. Score	0.04150	High Aggr. Traits (I)	-0.19095
	Educ. Level of Father	0.40991	IQ	0.03803
	Mother's Perception of Neg. Grp. Influences	1.00168		

TABLE IF

	Health Department Contact Prediction Sets			
	1 Intensives (76;65)		2 Total Sample (72;67)	
	Predictor Sets	Coefficient Sets	Predictor Sets	Coefficient Sets
Phase I & III Predictors	Constant	-1.29013	Constant	-4.84735
	Behavior	-1.56495	Home Location	-0.44086
	High Aggr. Traits (III)	-0.65159	High Aggr. Traits (I)	-0.26407
	Social Adjustment	0.05422	IQ	0.02201
	Mother's Perception of Negative Influences	1.13258	Social Adjustment	0.05511

TABLE IG

Relationship of S Values to Probability p

S Range	p	S Range	p
5.29330 to 4.18460	.01	-0.02000 to -0.06001	.51
4.18459 to 3.66357	.02	-0.06002 to -0.10007	.52
3.66356 to 3.31679	.03	-0.10008 to -0.14022	.53
3.31678 to 3.05506	.04	-0.14023 to -0.18048	.54
3.05505 to 2.84386	.05	-0.18049 to -0.22088	.55
2.84385 to 2.66617	.06	-0.22089 to -0.26147	.56
2.66616 to 2.51232	.07	-0.26148 to -0.30227	.57
2.51231 to 2.37628	.08	-0.30228 to -0.34332	.58
2.37627 to 2.25407	.09	-0.34333 to -0.38466	.59
2.25406 to 2.14287	.10	-0.38467 to -0.42633	.60
2.14286 to 2.04067	.11	-0.42634 to -0.46837	.61
2.04066 to 1.94592	.12	-0.46838 to -0.51082	.62
1.94591 to 1.85746	.13	-0.51083 to -0.55372	.63
1.85745 to 1.77438	.14	-0.55373 to -0.59712	.64
1.77437 to 1.69592	.15	-0.59713 to -0.64108	.65
1.69591 to 1.62150	.16	-0.64109 to -0.68565	.66
1.62149 to 1.55061	.17	-0.68566 to -0.73088	.67
1.55060 to 1.48284	.18	-0.73089 to -0.77684	.68
1.48283 to 1.41785	.19	-0.77685 to -0.82359	.69
1.41784 to 1.35534	.20	-0.82360 to -0.87121	.70
1.35533 to 1.29506	.21	-0.87122 to -0.91978	.71
1.29505 to 1.23677	.22	-0.91979 to -0.96939	.72
1.23676 to 1.18030	.23	-0.96940 to -1.02013	.73
1.18029 to 1.12547	.24	-1.02014 to -1.07211	.74
1.12546 to 1.07213	.25	-1.07212 to -1.12545	.75
1.07212 to 1.02015	.26	-1.12546 to -1.18028	.76
1.02014 to 0.96941	.27	-1.18029 to -1.23675	.77
0.96940 to 0.91980	.28	-1.23676 to -1.29504	.78
0.91979 to 0.87123	.29	-1.29505 to -1.35532	.79
0.87122 to 0.82361	.30	-1.35533 to -1.41783	.80
0.82360 to 0.77686	.31	-1.41784 to -1.48282	.81
0.77685 to 0.73090	.32	-1.48283 to -1.55059	.82
0.73089 to 0.68567	.33	-1.55060 to -1.62148	.83
0.68566 to 0.64110	.34	-1.62149 to -1.69590	.84
0.64109 to 0.59714	.35	-1.69591 to -1.77436	.85
0.59713 to 0.55374	.36	-1.77437 to -1.85744	.86
0.55373 to 0.51084	.37	-1.85745 to -1.94590	.87
0.51083 to 0.46839	.38	-1.94591 to -2.04065	.88
0.46838 to 0.42635	.39	-2.04066 to -2.14285	.89
0.42634 to 0.38468	.40	-2.14286 to -2.25405	.90
0.38467 to 0.34334	.41	-2.25406 to -2.37626	.91
0.34333 to 0.30229	.42	-2.37627 to -2.51230	.92
0.30228 to 0.26149	.43	-2.51231 to -2.66615	.93
0.26148 to 0.22090	.44	-2.66616 to -2.84384	.94
0.22089 to 0.18050	.45	-2.84385 to -3.05504	.95
0.18049 to 0.14024	.46	-3.05505 to -3.31677	.96
0.14023 to 0.10009	.47	-3.31678 to -3.66355	.97
0.10008 to 0.06003	.48	-3.66356 to -4.18458	.98
0.06002 to 0.02001	.49	-4.18459 to -5.29329	.99
		-5.29330 to -	1.00

Part II

Manual for Predicting Achievement and Social Adjustment

Part II of the manual was designed to answer specific questions about prediction of academic achievement and social adjustment using the systems derived from the regression analyses carried out in the Eau Claire County Youth Study. The predictive systems devised can help in predicting various achievement and adjustment scores for specific individuals in the last two years of high school. For example, a question to be answered by these prediction equations might be: "What will the social adjustment score of a student be as he completes high school?"

Based on the research findings of the Eau Claire County Youth Study, two prediction equations have been developed for predicting each of the following ten criteria: standardized achievement test scores (4), Behavior Traits (3), Social Adjustment (1), SCAT Total Score (1), and Rank in High School Graduating Class (1). These equations provide a basis for accuracy in prediction which represent significant improvements over mere chance. Moreover, the predictions are made within known confidence limits.

A reminder is in order to the effect that the same cautions which were stated for the discriminant function equations (Part I of this manual) also apply to equations derived from regression analyses. Other qualifications stated in Part I about using the same tests, the same scoring procedures, and the same coding systems are also applicable. Furthermore, there will again be predictors derived from the intensive sample and other predictors from the total sample. Also as in Part I, Phase I and/or Phase III predictors are used.

With the data collected during Phases I and/or III serving as the predictor variables and the data from Phase IV as the variables to be predicted, prediction equations for specific scores for the following criteria have been formulated: standardized achievement test scores expressed as percentiles in reading, social studies, science, and mathematics; low aggressive, high aggressive and total behavior traits scores; social adjustment score; SCAT total score; and rank in high school graduating class. As reported earlier in this report, these equations have been validated and cross-validated with accuracy ranging from 42 to 75 percent. These predictions systems were developed using a stepwise multiple linear regression techniques.

The purpose of the step-wise linear multiple regression analysis is to select the set of variables which will best predict some later criterion score of an individual. The step-wise process takes in only those variables that make the greatest contribution to prediction, and, at the same time, indicates their relative importance. The program generates the appropriate

coefficient for each predictor variable as well as an overall adjusting constant to be used in the prediction equation.

In general the linear prediction equation will take the form:

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + \ldots + akX$$

Y is the predicted criterion score where a_0 is overall adjusting constant

a_1 is (i = 1, 2, 3, . . . k) are appropriate coefficients

X_i (i = 1, 2, 3, . . . k) are predictor variables

This manual presents a relatively routine procedure for obtaining the desired criterion score for an individual. In general, the process involves multiplying the coefficient by the predictor variable value, and then adding the results to obtain the predicted criterion score. The technique is illustrated in the following pages.

The selection of which coefficients to use depends on: (1) What criterion variable is to be predicted; and (2) What predictor data are available. The answers to these questions determines which tables to use. The possible options are outlined in Tables A through J. Each table is divided according to whether the equation was derived from the intensively studied sample or from the total sample. Following each label (Intensives; Total Sample) is a bracketed pair of numbers. These numbers refer to the validation predictive accuracy and the cross-validation predictive accuracy. These are multiple correlation coefficients (R) which when squared are indices of the percent of accuracy of prediction.

The subsequent step-by-step example is designed to illustrate the procedures to be followed in determining the predicted criterion score of interest.

For example, the user wants to predict Carol's reading achievement score. The data available is Carol's grade level, behavior and IQ. Specifically, the prospective user knows: she is in grade three, her behavior is aggressive-disruptive (2), and her IQ is 87. With these specifications, the user's attention focuses on Table A, section 2, since this is the one section that contains the predictor variables that correspond to the available data on Carol.

In Figure E a sample calculation format is shown. In the first two columns the predictor variables and their corresponding coefficients as taken from Table A, section 2 are given. In column three of the format, Carol's scores for the predictor variables have been entered. The product column is the result of multiplying Carol's scores by the corresponding coefficient. Note that the score for the constant is one. The box

"predicted score" represents the sum of the products just obtained. The sum of 6.159 is the predicted percentile reading score for Carol.

Practice Format

PREDICTED Reading Achievement		NAME Carol	
SET OF OPTIMUM VARIABLES	SET OF COEFFICIENTS	Individual's Scores	Product
Constant	-62.143	1	-62.143
Grade	2.069	3	6.207
Behavior	- 6.667	2	-13.334
IQ	0.867	87	75.429
			Predicted Score: 6.159

Figure IIE

As second example, a prospective user wants to know what Ralph's social adjustment score would be. The user has at hand the following information on Ralph: Glueck total score (217.4); social adjustment III (57); and average teacher grades (2.80). Under these specifications, the user would select Table H, section 1.

In Figure F, the sample calculation format shows the predictor variables and their corresponding coefficients. In the "Individual's Scores" column, Ralph's scores have been entered. The "Product" column reflects the separate products formed by multiplying Ralph's scores by the corresponding coefficients. The Predicted Score box gives Ralph's predicted criterion social adjustment score as, 32.803 or 33. In the Eau Claire County Youth Study, 33 (on a scale of 60) approximated the mean for aggressive-disruptive students in eleventh grade, in Phase IV.

Predicted Social Adjustment Score		Name: Ralph	
Set of Optimum Variables	Set of Coefficients	Individual's Scores	Product
Constant	28.921	1	28.921
Glueck Total Score	- 0.030	217.4	- 6.522
Social Adjustment III	0.170	57	9.690
Avg. Teacher Grades	0.255	2.80	.714
		Predicted Score:	32.803

Practice Exercise:

You are interested in predicting the Total Behavior Traits score that Liz would have. The following data are available to you: her social adjustment III score (44); her high aggressive behavior traits score, (4); and her behavior is characterized as aggressive-disruptive.

Predicted _____		Name _____
Set of Optimum Variables	Set of Coefficients	Individual's Scores / Product
		Predicted Score: _____

1. Which table would you select to use?

2. Which section of that table would you use?

3. Fill in practice calculation format provided above.

The correct responses to these items are shown in Appendix C.

TABLE IIA

Standardized Achievement Test

For Predicting Percentile Score in Reading			
1 INTENSIVES (.77;.77)		2 TOTAL SAMPLE (.74;.79)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	-65.678	Constant	-62.143
Reading Score	0.392	Grade Level	2.069
IQ	0.601	Behavior	- 6.667
Avg. Teacher Grades	1.345	IQ	0.867
Ways Mother Wants Child to be Different from her	9.774	Avg. Teacher Grades	11.633

TABLE IIB

For Predicting Standardized Score in Social Studies			
1 INTENSIVES (.44;.71)		2 TOTAL SAMPLE (.68;.75)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	55.178	Constant	-87.220
Behavior	-13.278	Age	0.154
Avg. Teacher Grades	0.965	IQ	0.757
		Social Adjustment	0.363
		Avg. Teacher Grades	8.833

TABLE IIC

Standardized Achievement Test

For Predicting Score in Science			
1 INTENSIVES (.60;.45)		2 TOTAL SAMPLE (.66;.67)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	56.203	Constant	-23.674
KD Area 2	- 2.645	Sex	-16.103
High Aggr. Traits	16.104	IQ	0.732
Avg. Teacher Grades	1.622	Avg. Teacher Grades	10.679
Child's Behavior of which Mother Disapproves	11.068		

TABLE IID

Standardized Achievement Test

For Predicting Score in Mathematics			
1 INTENSIVES (.64;.57)		2 TOTAL SAMPLE (.71;.70)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	-3.613	Constant	-41.608
KD Area 1	-1.553	Sex	-12.971
IQ	0.587	IQ	0.911
Avg. Teacher Grades	1.311	Low Aggr. Traits (III)	- 3.549
		Avg. Teacher Grades	9.888

TABLE IIE

For Predicting High Aggressive Behavior Traits			
1 INTENSIVES (.81;.13)		2 TOTAL SAMPLE (.54;.15)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	0.526	Constant	1.122
High Aggr. Traits III	1.701	Behavior	0.473
		High Aggr. Traits III	0.714
		Social Adjustment	-0.018

TABLE IIF

For Predicting Low Aggressive Behavior Traits			
1 INTENSIVES (.54;.24)		2 TOTAL SAMPLE (.54;.27)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	0.155	Constant	2.512
High Aggr. Traits III	0.785	Low Aggr. Traits (I)	0.069
		Age	0.023
		High Aggr. Traits III	0.337

TABLE JIG

For Predicting Total Behavior Traits			
1 INTENSIVES (.72;.22)		2 TOTAL SAMPLE (.58;.29)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	0.371	Constant	0.951
High Aggr. Traits III	0.916	Behavior	0.382
		High Aggr. Traits III	0.343
		Social Adjustment III	-0.016

TABLE IIH

For Predicting Social Adjustment			
1 INTENSIVES (.72;.67)		2 TOTAL SAMPLE (.81;.74)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	28.921	Constant	17.356
Glueck Total Score	- 0.030	Social Adjustment III	0.195
Social Adjustment III	0.170	Avg. Teacher Grades	4.461
Avg. Teacher Grades	0.255		

TABLE II I

For Predicting Rank in High School Graduating Class			
1 INTENSIVES (.91;.81)		2 TOTAL SAMPLE (.88;.87)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	-36.805	Constant	-57.225
High Aggr. Traits (I)	- 3.010	Age	0.114
Glueck Total Score	- 0.054	IQ	0.198
KD Area 1	0.813	Social Adjustment III	0.430
Reading Score	0.227	Avg. Teacher Grades	20.798
Social Adjustment	0.601		
Avg. Teacher Grades	1.612		

TABLE IIJ

For Predicting SCAT Total Score			
1 INTENSIVES (.84;.72)		2 TOTAL SAMPLE (.85;.84)	
Predictor Set	Coefficient Set	Predictor Set	Coefficient Set
Constant	6.412	Constant	-49.465
Arithmetic Score	0.558	Sex	- 2.504
Low Aggr. Traits III	3.644	Age	0.123
Avg. Teacher Grades	1.169	IQ	0.797
Ways Mother Wants Child to be Different From her	7.800	Avg. Teacher Grades	7.467

Appendix A

Coding of Predictor Variables Used In Tables IA through IF and Tables IIA through IIJ

1. Grade: Enter 3, 6, or 9
2. Sex: Enter 1 = male; 2 = female
3. Location: Enter 1 = rural; 2 = urban
4. Age: Enter chronological age in months
5. Behavior: socially approved = 1
   aggressive disruptive = 2
6. High Aggressive Traits: Enter number of traits marked
   See Figure 1, Phase IV Report, page 3
7. Low Aggressive Traits: Enter number of traits marked
8. IQ: Score obtained from school record
9. Reading Achievement Score: grade equivalent score from standardized achievement test plus constant of 5 i.e. Metropolitan
10. Arithmetic Achievement Score: grade equivalent score from standardized achievement test plus constant of 5
11. KD Area 1: School

    Score the responses as plus or minus on the following sentence stems. Count number of items scored plus as plus and number scored minus as minus. Add these two totals algebraically to a constant of 20. This is the area score required.

Boys - 6th and 9th Grade

	Plus	Minus
Sentence 4	Option B or C	Option D
Sentence 7	Option D	---
Sentence 11	Option A or D	Option B
Sentence 15	Option A or C	Option B or D
Sentence 16	Option A	Option B
Sentence 23	Option A	Option C
Sentence 26	Option A or D	Option C
Sentence 29	Option A	Option B or C
Sentence 31	Option A or C	Option B
Sentence 33	Option D	Option A
Sentence 38	Option A, B or C	Option D
Sentence 47	Option A or C	Option D
Sentence 48	Option D	---
Sentence 51	Option B	Option C
Sentence 53	Option D	---
Sentence 57	Option A or D	Option B
Sentence 58	Option B	---
Sentence 60	Option C or D	Option A
Sentence 62	Option C	Option D
Sentence 64	Option B	Option A
Sentence 67	Option D	Option B
Sentence 69	---	Option B

Appendix (Continued)

Girls - 6th and 9th Grade

	Plus	Minus
Sentence 2	Option D	Option A
Sentence 4	Option B	---
Sentence 7	Option D	---
Sentence 11	Option A	Option B
Sentence 15	Option C	Option B
Sentence 16	Option A	Option B
Sentence 23	Option D	---
Sentence 26	Option D	Option B or C
Sentence 29	Option A	---
Sentence 31	Option A or C	Option B
Sentence 38	Option B	Option D
Sentence 46	Option D	Option C
Sentence 48	Option D	Option B
Sentence 53	Option A or D	Option B
Sentence 57	Option D	---
Sentence 58	Option C	Option B
Sentence 60	Option C	---
Sentence 62	Option A	---
Sentence 67	Option D	---

Boys - 3rd Grade

	Plus	Minus
Sentence 3	Option B or C	Option D
Sentence 8	Option A or D	Option B
Sentence 12	Option A or C	Option B or D
Sentence 13	Option A	Option B
Sentence 20	Option A	Option C
Sentence 23	Option A or D	Option C
Sentence 26	Option A	Option B or C
Sentence 28	Option A or C	Option B
Sentence 30	Option D	Option A
Sentence 35	Option A, B or C	Option D
Sentence 44	Option A or C	Option D
Sentence 45	Option D	---
Sentence 48	Option B	Option C
Sentence 50	Option D	---
Sentence 54	Option A or D	Option B
Sentence 55	Option B	---
Sentence 56	Option C or D	Option A
Sentence 58	Option C	Option D
Sentence 63	Option D	Option B
Sentence 65	---	Option B

Appendix (Continued)

Girls - 3rd Grade

	Plus	Minus
Sentence 2	Option D	Option A
Sentence 3	Option B	---
Sentence 8	Option A	Option B
Sentence 12	Option C	Option B
Sentence 13	Option A	Option B
Sentence 20	Option D	---
Sentence 23	Option D	Option B or C
Sentence 26	Option A	---
Sentence 28	Option A or C	Option B
Sentence 35	Option B	Option D
Sentence 43	Option D	Option C
Sentence 45	Option D	Option B
Sentence 50	Option A or D	Option B
Sentence 54	Option D	---
Sentence 55	Option C	Option B
Sentence 56	Option C	---
Sentence 58	Option A	---
Sentence 63	Option D	---

12. KD Area 2: Fears, failure, frustration, conflict, police, worry

Boys - 6th and 9th Grade

Score the responses as plus or minus on following sentence stems.

	Plus	Minus
Sentence 3	Option C	---
Sentence 5	Option A	Option C
Sentence 6	Option B	Option D
Sentence 10	Option C	Option D
Sentence 15	Option A or C	Option B or D
Sentence 22	Option A	---
Sentence 27	Option B or D	Option A
Sentence 30	Option A	Option C
Sentence 44	Option D	---
Sentence 47	Option A or C	Option D
Sentence 52	Option C or D	Option B
Sentence 54	Option D	Option C
Sentence 56	Option B	Option D
Sentence 61	Option A or B	Option D
Sentence 62	Option C	Option D
Sentence 63	Option C	Option A or D
Sentence 64	Option B	Option A
Sentence 67	Option D	Option B

. Appendix (Continued)

Girls - 6th and 9th Grade

	Plus	Minus
Sentence 6	Option A or B	Option D
Sentence 10	Option B	Option D
Sentence 15	Option C	Option B
Sentence 17	Option A	Option C or D
Sentence 22	Option D	Option C
Sentence 27	Option D	Option A
Sentence 35	Option D	---
Sentence 42	Option D	Option C
Sentence 52	Option A or D	Option B
Sentence 54	Option D	Option B or C
Sentence 61	Option A	---
Sentence 62	Option A	---
Sentence 63	Option D	---
Sentence 67	Option D	---

Boys - 3rd Grade

	Plus	Minus
Sentence 4	Option A	Option C
Sentence 5	Option B	Option D
Sentence 12	Option A or C	Option B or D
Sentence 19	Option A	---
Sentence 24	Option B or D	Option A
Sentence 27	Option A	Option C
Sentence 41	Option D	---
Sentence 44	Option A or C	Option D
Sentence 49	Option C or D	Option B
Sentence 51	Option D	Option C
Sentence 53	Option B	Option D
Sentence 57	Option A or B	Option D
Sentence 58	Option C	Option D
Sentence 59	Option C	Option A or D
Sentence 63	Option D	Option B

Girls - 3rd Grade

	Plus	Minus
Sentence 5	Option A or B	Option D
Sentence 12	Option C	Option B
Sentence 14	Option A	Option C or D
Sentence 19	Option D	Option C
Sentence 24	Option D	Option A
Sentence 32	Option D	---
Sentence 39	Option D	Option C
Sentence 49	Option A or D	Option B
Sentence 51	Option D	Option B or C
Sentence 57	Option A	---
Sentence 58	Option A	---
Sentence 59	Option D	---
Sentence 63	Option D	---

Appendix (Continued)

13. KD Proneness Scale Area 5 Score: Personal preferences, "I like," scoring keys as follows:

Boys - 6th and 9th Grade

Score the responses as plus or minus on the following sentence stems.

	Plus	Minus
Sentence 1	Option A	Option B
Sentence 39	Option C	---
Sentence 40	Option A	Option D
Sentence 43	Option D	Option C
Sentence 45	Option C	---
Sentence 52	Option C or D	Option B
Sentence 65	Option B	Option A
Sentence 70	Option B or D	Option A

Girls - 6th and 9th Grade

	Plus	Minus
Sentence 1	Option D	Option C
Sentence 35	Option D	---
Sentence 39	Option A	Option B
Sentence 40	Option B	Option C
Sentence 43	Option B	Option A
Sentence 52	Option A or D	Option B
Sentence 65	Option B	---
Sentence 66	---	Option A
Sentence 70	Option D	Option A

Boys - 3rd Grade from KD Proneness Scale - JRT & JFF

	Plus	Minus
Sentence 1	Option A	Option B
Sentence 36	Option C	---
Sentence 37	Option A	Option D
Sentence 40	Option D	Option C
Sentence 42	Option C	---
Sentence 49	Option C or D	Option B
Sentence 61	Option B	Option A
Sentence 66	Option B or D	Option A

Girls - 3rd Grade

	Plus	Minus
Sentence 1	Option D	Option C
Sentence 32	Option D	---
Sentence 36	Option A	Option B
Sentence 37	Option B	Option C
Sentence 40	Option B	Option A

Appendix (Continued)

	Plus	Minus
Sentence 49	Option A or D	Option B
Sentence 61	Option B	---
Sentence 62	---	Option A
Sentence 66	Option D	Option A

14. Teacher Grade Average - average of grades in the following subjects: English, science, mathematics, and social science

highest possible grade average = 4.00
based on A=4; B=3; C=2; D=1; F=0

15. Social Adjustment Score Phase III - Total score on a 1 to 10 scale for following nine items rated by classroom teachers:

1. Popularity	4. Adjustment	7. Responsibility
2. Initiative	5. Cooperation	8. Courtesy
3. Leadership	6. Appearance	9. Integrity

16. Glueck Total Score (five factors)

Predictive Factors	Score
Discipline of Child by Father	
Firm but kindly	9.3
Lax	59.8
Overstrict or erratic	72.5
Supervision of Child by Mother	
Suitable	9.9
Fair	57.5
Unsuitable	83.2
Affection of Father for Child	
Warm (including overprotective)	33.8
Indifferent or hostile	75.9
Affection or Mother for Child	
Warm (including overprotective)	43.1
Indifferent or hostile	86.2
Cohesiveness of Family	
Marked	20.6
Some	61.3
None	96.9

Circle number most appropriate and total circled numbers.

Appendix (Continued)

17. Educational Level of Father ranked from 1 to 6. Enter number of rank applicable.

Question: What is the highest grade in school you completed?

Rank 1 - Grade 1 - 6
2 - Grade 7 & 8
3 - Grade 9 - 11
4 - Graduated from high school
5 - Graduated from college
6 - Professional Graduate Degree

18. Mother's Use of Spare time - Score options 1, 2, 3, or 4 as 1
Score options 5, 6, 7 as 0

Question: What other things do you do with your spare time?
Option 1 - functional home relevant activity
Option 2 - mind broadening activity
Option 3 - enjoyable activity with family
Option 4 - enjoyable activity not with family
Option 5 - creative activities
Option 6 - no leisure activities
Option 7 - No answer

19. Mother's Perception of Negative Group Influences
Score options 2 or 4 as 1
Score options 1, 3, 5 as 0

Question: What individuals, groups and organizations have an influence on your child in ways you do not approve of?
Option 1 - associates and schoolmates
Option 2 - TV, comics, movies
Option 3 - other influences
Option 4 - no bad influences
Option 5 - No answer

20. Ways Mother Wants Child to be Different from her
Score options 2, 3, 4 as 1
Score options 1 or 5 as 0

Question: In what ways would you like your child to be different from you?
Option 1 - better off, happier, more accomplishment
Option 2 - more social skill and interest
Option 3 - personality and behavior traits
Option 4 - other
Option 5 - No answer

Appendix (Continued)

21. Child's Behavior of which Mother Disapproved
Score option 4 as 1
Score options 1, 2, 3, 5 as 0

Question: What did your child do at school you did not approve of?
Option 1 - skip, tardy
Option 2 - fighting, authority problem
Option 3 - not doing well, level of interest
Option 4 - no problem
Option 5 - don't know, no answer

22. Social Adjustment Score Phase IV. Total score on a 1 to 10 scale for the following six items rated by classroom teachers:

Initiative	Responsibility
Leadership	Courtesy
Adjustment	Integrity

Appendix B

FIGURE IE

PRACTICE FORMAT

PROBABILITY OF Juvenile Court Contact		NAME Clark	
SET OF OPTIMUM VARIABLES	SET OF COEFFICIENTS	Individual's Scores	PRODUCT: $C_i X_i$
Constant	-1.09495	1	-1.09495
Low Aggr. Traits (I)	-0.73627	4	-2.94508
High Aggr. Traits (III)	-2.41596	2	-4.83192
Social Adjustment	0.08158	60	4.89480
			TOTAL S = -3.97715

1. Which table would you select?
   Answer: Table D - Section I

2. Complete Figure E

3. What is Clark's S value?
   Answer: -3.97715

4. From Table G, what is the probability that Clark will appear before a juvenile court?
   Answer: .98

Appendix C

PRACTICE FORMAT

Predicted Total Behavior Traits Score		Name Liz	
Set of Optimum Variables	Set of Coefficients	Individual's Scores	Product
Constant	0.951	1	0.951
Behavior	0.382	1	0.764
High Agg. Traits III	0.343	4	1.372
Social Adjustment III	-0.016	44	-0.704
		Predicted score:	2.383 or 2.4

1. Which table would you select to use?
   Answer: Table IIG

2. Which section of that table would you use?
   Answer: Section 2

Appendix C

PRACTICE FORMAT

Predicted Total Behavior Traits Score — Name Liz

Set of Optimum Variables	Set of Coefficients	Individual's Scores	Product
Constant	0.951	1	0.951
Behavior	0.382	1	0.764
High Agg. Traits III	0.343	4	1.372
Social Adjustment III	-0.016	44	-0.704
		Predicted score:	2.383 or 2.4

1. Which table would you select to use?
   Answer: Table IIG

2. Which section of that table would you use?
   Answer: Section 2